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THE TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY.

VOL. XXIII.

SESSION 1897-98.

EDINBURGH: OLIVER AND BOYD
PUBLISHERS TO THE SOCIETY
1898.

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PREFACE.

THIS, the twenty-third volume of the Society's Transactions, contains a record of its proceedings during the Session 1897–98.

In it, as in former volumes, the views brought forward in the Papers are to be considered as those of the writers themselves, and not as those of the Society as a body.

No meeting of the Society was held in July owing to the presence in the city of the British Medical Association during that month.

THE EDITOR.

October 1898.

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John W. Ballantyne, M.D., F.R.C.P. Ed., ... 1896

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	William Wright Millard, M.B., C.M.,	1884
	John Mowat, M.D., C.M.,	1884
	William John Beattie, L.R.C.P. Ed., L.F.P. & S. Glasg., *Stockton-on-Tees*,	1884
110	James Lumsden Bell, M.B., C.M., *Driffield, Yorkshire*,	1884

		Date of Admission.
	Thomas Brown Darling, M.D., C.M.,	1884
	*Harry Melville Dunlop, M.D., F.R.C.P. Ed.,	1884
	*Robert William Felkin, M.D., *London*,	1884
	James K. King, M.D., *Watkins, New York*,	1884
115	William Marshall, L.R.C.S. Ed., *Milnathort*,	1884
	William Richardson, M.D., F.R.C.S. Ed., *Bristol*,	1884
	Fourness Barrington, M.B., F.R.C.S. Eng., *Sydney, Australia*,	1884
	*Francis William Nicol Haultain, M.D., F.R.C.P. Ed.,	1884
	*John Struthers Stewart, L.R.C.P. & S. Ed.,	1884
120	W. G. Anglin, M.D., C.M., *Kingston, Ontario*,	1885
	Alexander Campbell, M.D., F.R.C.S. Ed., *Dundee*,	1885
	Charles Batten Gracie, L.R.C.P. Ed., M.R.C.S. Eng., *Burntisland*,	1885
	Frederick Anastasius Saunders, F.R.C.S. Ed., L.R.C.P. Ed., *Grahamstown, South Africa*,	1885
	John Smith, M.D., M.R.C.S. Eng., *Kirkcaldy*,	1885
125	Allan Cuthbertson Sym, M.D., C.M.,	1885
	Frederick J. Underhill, F.R.C.S. Ed., L.R.C.P. Ed., *British Columbia*,	1885
	William Gayton, M.D., M.R.C.P.L., M.R.C.S. Eng., *London*,	1885
	*Alexander Matthew, F.R.C.S. Ed., *Corstorphine*,	1885
	Thomas Cargill Nesham, M.D., M.R.C.S. Eng., *Newcastle-on-Tyne*,	1885
130	Alexander Somerville Cumming, M.D., F.R.C.P. Ed.,	1885
	Gustave Michael, M.B., C.M., *London*,	1885
	*James Haig Ferguson, M.D., F.R.C.P. Ed., M.R.C.S. Eng.,	1885
	John Edward Gemmell, M.B., C.M., *Liverpool*,	1885
	Robert Stewart, M.B., C.M.,	1885
135	Surgeon-Captain Robert Charles Macwatt, M.B., B.Sc., C.M., 7th Bengal Cavalry, *Bombay*,	1885
	*E. H. Lawrence Oliphant, M.D., C.M., *Glasgow*,	1885
	Andrew Wallace Walker, L.R.C.P. Ed., L.F.P. & S. Glasg.,	1886
	James Hogarth Pringle, M.B., F.R.C.S. Eng., *Glasgow*,	1886
	Walter Blake Nisbet, M.B., C.M., *N. Queensland*,	1886
140	Robert Swan Aitchison, M.D., F.R.C.P. Ed.,	1886
	John Walton Hamp, L.F.P. & S. Glasg., L.S.A., *Wolverhampton*,	1886
	John Dickinson Leigh, M.B., C.M., *Brotton, Yorkshire*,	1886
	James Auriol Armitage, M.D., C.M., *Wolverhampton*,	1886
	William Henry Miller, M.D., F.R.C.P. Ed.,	1886
145	John M'Call, L.R.C.P. Ed.,	1886
	Thomas Wood, M.B., C.M.,	1886
	F. E. Drumheller, M.D., *Sunbury, Pennsylvania*,	1887
	Hugh M'Callum, L.R.C.P. & S. Ed., *Kinloch-Rannoch*,	1887
	Nutting Stuart Fraser, M.B., M.R.C.S. Eng., *St John's, Newfoundland*,	1887
150	Augustus Alexander Matheson, M.D., F.R.C.P. Ed.,	1887
	Robert Mackenzie, M.D., C.M.,	1887
	Simon Linton, M.B., C.M., *Grangemouth*,	1887
	Thomas Jackson Thyne, M.B., F.R.C.P. Ed.,	1887
	W. Burns Macdonald, M.B., C.M., *Dunbar*,	1887
155	Charles William J. Chepmell, M.D., L.R.C.P. & S. Ed., *Brighton*,	1887
	John St Clair Boyd, M.D., M.Ch., *Belfast*,	1887
	Briton Smallman Robson, M.B., C.M., *Newcastle-on-Tyne*,	1887
	Ernest T. Roberton, M.D., M.R.C.S. Eng., *New Zealand*,	1887
	*Samuel Sloan, M.D., F.F.P. & S. Glasg., *Glasgow*,	1887
160	James Wm. Fox, L.R.C.P. & S. Ed., *London*,	1887
	John Frederick Sturrock, M.B., C.M., *Broughty-Ferry*,	1887
	Alexander Primrose, M.B., M.R.C.S. Eng., *Toronto, Canada*,	1887
	Arthur Perigal, M.D., M.R.C.S. Eng., *New Barnet, Herts*,	1887
	James Aitken Clark, M.B., C.M.,	1887
165	Edward Carmichael, M.D., F.R.C.P. Ed.,	1887

		Date of Admission.
	Percival Humble Watson, M.R.C.S. Eng., L.R.C.P. Ed. *Newcastle-on-Tyne*,	1887
	Charles Clark Teacher, M.B., C.M.,	1887
	Robert Inch, M.B., C.M., *Gorebridge*,	1887
	Ellis Thomas Davies, M.D., M.R.C.S. Eng., *Liverpool*,	1887
170	John Orr, M.B., C.M., *Manchester*,	1887
	George Owen Carr Mackness, M.D., C.M., *Broughty-Ferry*,	1887
	Francis Joseph Baildon, M.B., C.M., *Southport*,	1887
	Surgeon-Lt. Ralph H. Maddox, M.B., M.R.C.S. Eng., I.M.S., *Bombay*,	1887
	James Williamson Martin, M.D., F.R.C.P. Ed., *Dumfries*,	1887
175	James Andrew Blair, M.B., C.M., D.Sc., *Straiton, Maybole*,	1887
	John Robert Henry Dubourg, L.R.C.P. & S. Ed., *Liverpool*,	1887
	*John Thomson, M.D., F.R.C.P. Ed.,	1887
	William M'Creadie, M.B., M.R.C.P. Ed.,	1887
	Robert Kirk, M.D., F.R.C.S. Ed., *Bathgate*,	1887
180	*William Fraser Wright, M.B., C.M., *Leith*,	1887
	Alexander Bruce, M.D., F.R.C.P. Ed.,	1887
	Richard Joseph Trestan, L.R.C.P. & S. Ed., *Retford, Notts*,	1887
	Robert Henry Blaikie, M.D., F.R.C.S. Ed.,	1888
	James Hutcheson, M.D., F.R.C.S. Ed.,	1888
185	A. A. Jervis Pereira, M.D., *Delagoa Bay*,	1888
	Christopher Martin, M.B., F.R.C.S. Eng., *Birmingham*,	1888
	John George Havelock, M.D., C.M., *Montrose*,	1888
	John Pirie, M.B., C.M.,	1888
	James Gibson Graham, M.B., C.M., *Glasgow*,	1888
190	Robert Adams Brewis, M.D., C.M., *Dursley*,	1888
	John Allison, M.D., C.M., *Kettering, Northampton*,	1888
	Surgeon-Captain Charles H. Bedford, M.D., D.Sc., M.R.C.S. Eng., Bengal Army, *Bombay*,	1888
	Archibald Cowan Guthrie, M.B., C.M.,	1888
	John Cunninghame, M.B., C.M., *New Zealand*,	1888
195	Samuel Beatty, M.B., C.M., *Pitlochry*,	1888
	Professor James Chalmers Cameron, M.D., *Montreal*,	1888
	Albert Edward Morison, M.B., F.R.C.S. Ed., M.R.C.S. Eng., *Hartlepool*,	1888
	George H. Temple, M.B., C.M., *Weston-super-Mare*,	1888
	Norman L. Boxill, M.B., C.M., *Barbados*,	1888
200	Khumar B. Narayan, L.R.C.P. & S. Ed., *Cooch Behar, India*,	1888
	John Hunter Helm, M.B., C.M., *Ratho*,	1888
	William Lundie, M.D., C.M.,	1888
	George Scott MacGregor, M.D., C.M., *Glasgow*,	1888
	William Sneddon, M.B., C.M., *Cupar-Fife*,	1888
205	Thomas Watts Eden, M.B., C.M., *London*,	1888
	William Fordyce, M.D., C.M.,	1888
	Charles E. Harvey, M.B., M.R.C.S. Eng., *Sav-la-Mar, Jamaica*,	1889
	Frederick E. Welby, F.R.C.S. Ed., *St Helena*,	1889
	Alexander Lang Murray, L.R.C.P. & S. Ed.,	1889
210	George Pirrie Boddie, M.B., C.M.,	1889
	James F. W. Ross, M.D., *Toronto, Canada*,	1889
	J. Stuart Nairne, F.R.C.S. Ed., F.F.P. & S. Glasg., *Glasgow*,	1889
	John David Williams, M.D., C.M., *Cardiff*,	1889
	James S. Fox, M.B., M.R.C.S. Eng., *St Helens*,	1889
215	S. M'Murtry, M.D., *Louisville, Kentucky, U.S.A.*,	1889
	Hugh Jamieson, M.D., C.M.,	1889
	Thomas Wm. Nassau Greene, L.R.C.P. Ed., L.R.C.S.I., *Southsea*,	1889
	John Clarence Webster, M.D., F.R.C.P. Ed., *Montreal*,	1889
	William George Aitchison Robertson, M.D., F.R.C.P. Ed.,	1889
220	William Basil Orr, M.D., C.M.,	1889
	Frederick Mann, M.B., C.M., *Ashton-on-Lyne*,	1889

		Date of Admission.
	Edward Farr Armour, M.B., C.M.,	1889
	George Wilkinson, M.D., C.M., *Liverpool*,	1889
	James Lamond Lackie, M.D., F.R.C.P. Ed.,	1889
225	James Wilson, M.B., C.M.,	1889
	Archibald Maclean, M.D., C.M., *Kilmarnock*,	1890
	Frederick William Lyle, M.D., C.M., *London*,	1890
	Thomas Dobson Poole, M.D., C.M., *St Anne's-on-the-Sea*,	1890
	Walter Scott Gibson, M.B., C.M., *London*,	1890
230	Charles Newberry Cobbett, M.D., C.M., *London*,	1890
	Alexander William Gordon Price, M.B., C.M.,	1890
	Hugh Shapter Robinson, M.R.C.S. Eng., L.R.C.P. Ed., *London*,	1890
	George Matheson Cullen, M.D., C.M.,	1890
	Frederick Albert L. Lockhart, M.B., C.M., *Montreal, Canada*,	1890
235	Edmund Frederick Tanney Price, M.B., C.M.,	1890
	George Lovell Gulland, M.D., F.R.C.P. Ed.,	1890
	Ernest Theophilus Roberts, M.D., C.M., *Keighley*,	1890
	Owen Foulkes Evans, M.D., C.M., *Liverpool*,	1890
	James Duncan Farquharson, M.B., C.M., *Newcastle-on-Tyne*,	1890
240	William Smith, L.R.C.P. & S. Ed.,	1890
	Harvey Littlejohn, M.B., F.R.C.S. Ed.,	1890
	Carstairs Cumming Douglas, M.D., C.M., *Glasgow*,	1890
	Robert Wise, M.D., C.M., *London*,	1890
	William Russell, M.D., F.R.C.P. Ed.,	1890
245	William Paterson, M.B., C.M., *Glasgow*,	1890
	Alexander Scott Duncan, M.B., C.M., *London*,	1890
	Prof. William Keiller, F.R.C.S. Ed., *Galveston, Texas, U.S.A.*,	1890
	Michael Dewar, M.D., C.M.,	1891
	Gains T. Smith, M.D., *Moncton, New Brunswick*,	1891
250	John Hugh Alexander Laing, M.B., C.M.,	1891
	Robert Thin, M.B., F.R.C.P. Ed.,	1891
	Alexander H. Vassie, M.B., C.M., *London*,	1891
	James Harvey, M.B., C.M.,	1891
	Alexander Henderson, M.B., C.M.,	1891
255	James Smith, M.B., C.M.,	1891
	George Balfour Marshall, M.D., C.M., *Glasgow*,	1891
	Edward Henry Alexander, M.B., M.R.C.S. Eng., *New Zealand*,	1891
	William Booth, F.R.C.S. Ed.,	1891
	Harry St Clair Gray, M.D., C.M., *Glasgow*,	1891
260	Richard T. Yoe, M.D., *Louisville, Kentucky, U.S.A.*,	1891
	Alexander Bruce Giles, M.D., C.M.,	1891
	Hamilton Graham Langwill, M.D., F.R.C.P. Ed., *Leith*,	1891
	Herbert Ernest Lee, M.B., C.M., *Australia*,	1891
	Charles Martin, M.B., C.M., *Birmingham*,	1892
265	William Murray Cairns, M.B., C.M., *Liverpool*,	1892
	Robert Dundas Helm, M.D., C.M., *Carlisle*,	1892
	William Wood, M.B., C.M.,	1892
	James Thomas Moore Giffen, F.R.C.S. Ed., *Chester*,	1892
	John Alexander Robertson, M.B., C.M., *Cape Colony*,	1892
270	Frank Dendle, M.B., C.M., *Lochgelly*,	1892
	Julius Henry Beilby, M.B., C.M.,	1892
	Frederick Thomas Anderson, M.D., F.R.C.S. Ed., *Barnstaple*,	1892
	J. Gordon Smith, L.R.C.P. & S. Ed., *West Africa*,	1892
	Simson Carstairs Fowler, M.B., C.M., *Juniper Green*,	1892
275	Hugh Ernest Fraser, M.D., C.M., *Dundee*,	1892
	Prof. John Alexander Campbell Kynoch, M.B., M.R.C.P. Ed., *Dundee*,	1892
	Alexander Brown Ritchie, M.B., C.M., *Hulme, Manchester*,	1892
	Walter John Shaw, M.B., C.M., *Cockburnspath*,	1892
	Robert Stirling, M.D., C.M., *Perth*,	1892
280	William Henry Vickery, F.R.C.S. Eng., L.R.C.P. Lond., *Newcastle-on-Tyne*,	1892
	George Foggin, L.R.C.P. & S. Ed., *Newcastle-on-Tyne*,	1892

		Date of Admission.
	William Ramsay Smith, M.B., C.M., *Australia*,	1892
	A. Watson Munro, M.D., *Sydney, Australia*,	1892
	Charles Frederick Ponder, M.B., C.M., *Darjeeling, India*,	1892
285	John Tod, M.B., C.M., *Leith*,	1892
	Richard J. Erskine Young, M.D., C.M.,	1892
	George Thomas C. Adams, L.R.C.P. & S. Ed., *Melbourne, Aust.*,	1892
	George Henry Walter Smith, M.D., C.M., *Sydney, Australia*,	1892
	John Lawson Dick, M.B., C.M., *Cape Colony*,	1892
290	Charles Croomhall Easterbrook, M.B., C.M.,	1892
	Walter Petrie Simpson, M.B., C.M., *Coningsby*,	1892
	James Ernest Moorhouse, M.D., C.M., *Stirling*,	1892
	Alfred James Anderson Peters, L.R.C.P. & S. Ed.,	1892
	D. W. Johnston, F.R.C.S. Ed., *Johannesburg, South Africa*,	1892
295	David George Davidson, M.B., C.M.,	1892
	Allen Thomson Sloan, M.D., C.M.,	1893
	Robert Balfour Graham, F.R.C.S. Ed., *Leven, Fife*,	1893
	Albert Frederick Rosa, M.B., C.M.,	1893
	George Benjamin Mitchell, M.B., C.M., *Whitby*,	1893
300	Andrew Walker, M.D., C.M., *Sheffield*,	1893
	H. Robins, M.D., *Jamaica*,	1893
	L. J. Schofield, M.D., *Warrensburg, Mo., U.S.A.*,	1893
	David Milligan, M.B., C.M.,	1893
	George Morton Wilcockson, L.R.C.P. & S. Ed., *Reading*,	1893
305	John MacRae, M.D., C.M., *Murrayfield*,	1893
	Ernest Switzer Forde, L.R.C.P. & S. Ed., *Dalry, Galloway*,	1893
	George Wade, M.D., C.M., *Melrose*,	1893
	Philip Grierson Borrowman, M.B., C.M., *Elie, Fife*,	1893
	John Liddell, M.D., C.M., *Harrogate*,	1893
310	William Herbert Gregory, M.D., C.M., *Beverley, Yorks*,	1893
	Ernest Coleman Moore, M.B., C.M.,	1893
	Cuthbert Christy, M.B., C.M., *Broomfield*,	1893
	Robert Hutchison, M.D., M.R.C.P. Ed., *London*,	1893
	James Gibson Cattanach, M.B., C.M.,	1893
315	George Elder, M.D., F.R.C.P. Ed.,	1893
	Alexander Maitland Easterbrook, M.B., C.M., *Gorebridge*,	1893
	W. H. M'Kenley, M.D., *New York*,	1893
	Robert William Roberts, L.R.C.P. & S. Ed., *South Wales*,	1894
	Claude Buchanan Ker, M.D., C.M.,	1894
320	John Malcolm Farquharson, M.B., C.M.,	1894
	Charles Alexander Butchart, M.B., C.M.,	1894
	Frederick Maurice Graham, L.R.C.P. & S. Ed., *Market-Drayton*,	1894
	Robert Hoggan, M.B., C.M., *Liberton*,	1894
	James Livingstone Thompson, M.B., C.M., *Australia*,	1894
325	George Stevenson Shirt Hirst, M.B., C.M., *Hinckley*,	1894
	John Stevens, M.D., F.R.C.P. Ed.,	1894
	Charles Isodon Bodon, M.D., *Budapest*,	1894
	Hugh Lewis Hughes, L.R.C.P. & S. Ed., *Dowlais*,	1894
	Sylvanus Glanville Morris, M.D., C.M., *Nantgaredig*,	1894
330	Georges P. Coromilas, M.D., *Athens, Greece*,	1894
	Thomas Easton, M.D., C.M.,	1894
	David Robertson Dobie, M.D., C.M., *Coldstream*,	1894
	Gopal Govind Vatve, M.D., *Bombay*,	1894
	Robert William Beesley, M.B., C.M., *Bolton*,	1894
335	William A. Stephen, M.B., C.M., *Loftus-in-Cleveland*,	1894
	William Edward Fothergill, M.D., C.M., *Manchester*,	1894
	George Sandison Brock, M.D., C.M., *Rome*,	1894
	John M. Munro Kerr, M.B., C.M., *Glasgow*,	1894
	John Montgomery, M.B., C.M., *Birmingham*,	1895
340	Robert Cochrane Buist, M.D., C.M., *Dundee*,	1895
	Robert Thomson Ferguson, M.B., C.M., *Anstruther*,	1895
	William Henry Stephenson, L.R.C.P. & S. Ed., L.F.P. & S. Glasg., *Manchester*,	1895

		Date of Admission
	Angus Vallance MacGregor, M.D., C.M., *Hartlepool*,	1895
	Charles William Donald, M.B., C.M.,	1895
345	Oguntola Sapara, L.R.C.P. & S. Ed., *Lagos, W. Africa*,	1895
	John Struthers, M.B., C.M., *Transkei, South Africa*,	1895
	B. W. Broad, M.B., C.M., *Cardiff*,	1895
	Edwin Hindmarsh, M.B., C.M., *Bengal*,	1895
	Patrick Mackin, L.R.C.P. & S. Ed., *New Zealand*,	1895
350	G. Edgar Helme, M.B., C.M., *Manchester*,	1895
	Percy T. Hughes, M.B., C.M., *Darlington*,	1895
	John Hosack Fraser, M.B., F.R.C.P. Ed., *Bridge of Allan*,	1895
	Stewart Grant Ogilvy, M.B., C.M.,	1895
	Thomas Howard Morgan, M.D., F.R.C.S. Ed., *Queensland, Aust.*,	1895
355	William Macrae Taylor, M.B., C.M.,	1895
	David James Graham, M.B., C.M.,	1895
	Walter William Chipman, M.B., C.M.,	1895
	Oswald Hanson Isard, M.B., C.M., *Croydon*,	1896
	John Cumming, F.R.C.S. Ed., L.R.C.P. & S. Ed.,	1896
360	Sol Jervois Aarons, M.D., C.M., *London*,	1896
	Robert Beveridge, M.B., C.M., *Leith*,	1896
	John Anderson, M.B., C.M., *Pitlochry*,	1896
	Thomas John Burton, M.D., C.M., *Bearsden*,	1896
	Robert M. Leith, M.B., C.M., *Port Elizabeth, Cape Colony*,	1896
365	Robert Gordon M'Kerron, M.B., C.M., *Aberdeen*,	1896
	Donald George Gordon Macdonald, M.D., C.M., *Aberdeen*,	1896
	Frederick John M'Cann, M.D., M.R.C.P.L., *London*,	1896
	David Robert Taylor, L.R.C.P. & S.Ed., *Ayton*,	1896
	James Curtis Whyte, M.D., C.M., *Dalkeith*,	1896
370	Hugh Eyres, M.B., C.M., *Catterick*,	1896
	George William Simla Paterson, M.B., C.M.,	1896
	William Robert Martine, M.B., C.M., *Haddington*,	1896
	Robert Henry Watson, M.D., C.M., *Hamilton*,	1896
	Thomas Marshall Callender, M.B., C.M.,	1896
375	Lewis Grant, M.B., C.M., *Liverpool*,	1896
	Robert Robertson, M.B., C.M.,	1897
	James Wilkie, L.R.C.P., & S. Ed., *Portobello*,	1897
	Andrew Graham, M.D., *Currie*,	1897
	Douglas Chalmers Watson, M.B., C.M.,	1897
380	Robert Mair, M.D., C.M., *Hawick*,	1897
	Roderick Murdoch Matheson, M.D., C.M., *Isle of Man*,	1897
	Robert Jardine, M.D., F.F.P.S.Glasg., M.R.C.S.Eng., *Glasgow*,	1897
	Daniel Charles Edington, M.B., C.M., *Alva*,	1897
	Edwin Arthur Gibson, M.B., C.M., *Glasgow*,	1897
385	John Macmillan, M.B., C.M., F.R.C.P. Ed.,	1897
	Harold Sherman Ballantyne, M.B., C.M., *Dalkeith*,	1897
	Ernest Edward Porrit, M.B., C.M.,	1897
	William John Garbutt, M.B., C.M., *Leith*,	1897
	Henry John Forbes Simson, M.B., C.M.,	1897
390	William Herbert Goldie, M.B., C.M., *Auckland, New Zealand*,	1897
	Charles Minor Cooper, M.B., Ch.B.,	1897
	William Alexander Potts, M.D., C.M., *Birmingham*,	1897
	Angus Macdonald, M.B., C.M.,	1897
	Bernard Samuel Story, M.D., F.R.C.S.E., *Cardiff*,	1898
395	Alexander Macdonald, M.B., C.M.,	1898
	George Robert Livingstone, B.B., C.M., *Dublin*,	1898
	Charles Carmichael Forrester, M.B., C.M.,	1898
	William Morrison Milne, M.B., C.M.,	1898
	Percival George Bannister, M.D., C.M., *Stanley*,	1898
400	William Joseph Murphy Barry, M.D., M.R.C.P. Ed., *Dublin*,	1898
	Harold Malcolmson, M.B., C.M., *Holywood, Co. Down*,	1898
	John Christie Forbes, L.R.C.P. & S. Ed., *Liberton*,	1898
	Alexander Cruikshank Ainslie, M.B., C.M.,	1898
404	Henry Aylmer Dumat, M.D., C.M., *Durban, South Africa*,	1898

ORDINARY FELLOWS.

ARRANGED ALPHABETICALLY.

(a.) LIFE MEMBERS.

		Date of Admission.
	Anderson, Dr John, Pitlochry,	1896
	Barbour, Dr A. H. Freeland, 4 Charlotte Square,	1879
	Craig, Dr William, 71 Bruntsfield Place,	1870
	Croom, Dr J. Halliday, 25 Charlotte Square,	1870
5	Cumming, Dr John, 94 Gilmore Place,	1896
	Dumat, Dr Henry Aylmer, 4 Fingal Place,	1898
	Hart, Dr D. Berry, 29 Charlotte Square,	1877
	Johnston, Dr D. W., P.O. Box 2022, Johannesburg, South African Republic,	1892
	Morgan, Dr T. H., Gympie, Queensland, Australia,	1895
10	Ponder, Dr Charles F., Guild Mission House, Kalimpong, Darjeeling, India,	1892
	Ranking, Dr J. E., Tunbridge Wells,	1881
	Ross, Dr James F. W., 481 Sherbourne Street, Toronto, Canada,	1889
	Simpson, Professor A. R., 52 Queen Street,	1858
	Struthers, Dr John, Nqamakwe, Transkei, South Africa,	1895
15	Vatve, Dr Gopal Govind, care of H.H. The Rajah of Miraj, Bombay, India,	1894

(b.) ANNUAL SUBSCRIBERS.

	Aarons, Dr S. J., 15 Devonshire Place, Cavendish Square, London, W.,	1896
	Adam, Dr George Rothwell, Carlton House, Hotham Street, East Melbourne, Australia,	1879
	Adams, Dr George T. Cooke, 32 Collins Street, Melbourne, Victoria, Australia,	1892
	Affleck, Dr J. O., 38 Heriot Row,	1869
20	Ainslie, Dr A. C., 20 Newington Road,	1898
	Aitchison, Dr R. S., 74 Great King Street,	1886
	Alexander, Dr E. H., Blenheim, New Zealand,	1891
	Alexander, Dr W. B., 8 Blenheim Place,	1882
	Allison, Dr J., Fuller House, Kettering, Northampton,	1888
25	Anderson, Dr Fred. T., Boutport Street, Barnstaple, Devonshire,	1892
	Andrew, Dr James, 2 Atholl Crescent,	1868
	Anglin, Dr W. G., 52 Earl Street, Kingston, Ontario,	1885
	Archibald, Dr J., 2 The Avenue, Beckenham, Kent,	1877
	Armitage, Dr J. A., 28 Waterloo Road South, Wolverhampton,	1886
30	Armour, Dr E. F., 149 Bruntsfield Place,	1889
	Badger, Dr W., Penicuik,	1880
	Baildon, Dr F. J., 42 Hoghton Street, Southport,	1887
	Balfour, Dr Andrew, 12 Abercorn Terrace, Portobello,	1877
	Balfour, Dr G. W., 17 Walker Street,	1847
35	Ballantyne, Dr A., Dalkeith,	1870
	Ballantyne, Dr H. S., Dalkeith,	1897
	Ballantyne, Dr J. W., 24 Melville Street,	1883
	Bannister, Dr P. G., Brae Cottage, Stanley, Perthshire,	1898
	Barrington, Dr Fourness, 213 Macquarrie Street, Sydney, Australia,	1884
40	Barry, Dr W. J. M., 72 Lower Baggott Street, Dublin,	1898

		Date of Admission.
	Beatty, Dr Samuel, Craigvar, Pitlochry,	1888
	Beatty, Dr W. J., Stockton-on-Tees,	1884
	Bedford, Surgeon-Captain Charles H., M.D., D.Sc., M.R.C.S. Eng., H.M. Indian Medical Service, care of W. Watson & Co., 28 Apollo Street, Bombay,	1888
	Beesley, Dr R. W., Infirmary and Dispensary, Bolton,	1894
45	Beilby, Dr Julius H., 10 Clarendon Crescent,	1892
	Bell, Dr James L., Driffield, Yorkshire,	1884
	Bell, Dr Robert, 29 Lynedoch Street, Glasgow, W.,	1878
	Bentley, Dr G. H., Kirkliston,	1877
	Beveridge, Dr Robert, 9 James Place, Leith,	1896
50	Black, Dr Alexander, 13 Howe Street,	1881
	Black, Dr J. Watt, 15 Clarges Street, Piccadilly, London, W.,	1863
	Blaikie, Dr R. H., 42 Minto Street,	1888
	Blair, Dr J. A., Straiton Manse, Maybole,	1887
	Bleloch, Dr A., 2 Lonsdale Terrace,	1876
55	Boddie, Dr G. P., 147 Bruntsfield Place,	1889
	Bodon, Dr C. I., Király-utca 76, Budapest, Hungary,	1894
	Booth, Dr William, 1 Minto Street,	1891
	Borrowman, Dr Philip G., Elie, Fife,	1893
	Boxill, Dr N. L., Buttalls, St George, Barbados,	1888
60	Boyd, Dr J. St Clair, 27 Victoria Place, Belfast,	1887
	Brewis, Dr N. T., 23 Rutland Street,	1883
	Brewis, Dr R. Adams, Dursley, Gloucestershire,	1888
	Broad, Dr B. W., The Sanitorium, Cardiff,	1895
	Brock, Dr G. Sandison, Via Veneto, B. Rome,	1894
65	Brodie, Dr W. Haig, Battle, Sussex,	1881
	Bruce, Dr Alexander, 13 Alva Street,	1887
	Buist, Dr J. W., 1 Clifton Terrace,	1877
	Buist, Dr R. C., Annfield House, Dundee,	1895
	Burton, Dr Thomas J., Lonsdale, Bearsden, Glasgow,	1896
70	Butchart, Dr C. A., 26 Leith Walk, Leith,	1894
	Cairns, Dr W. Murray, 67 Catherine Street, Liverpool,	1892
	Calder, Dr H. L., 60 Leith Walk, Leith,	1882
	Callender, Dr T. M., Inverard, Inverleith Gardens,	1896
	Cameron, Prof. James C., M.D., 941 Dorchester St., Montreal,	1888
75	Campbell, Dr Alexander, 1 Clarendon Terrace, Dundee,	1885
	Cappie, Dr James, 37 Lauriston Place,	1862
	Carmichael, Dr Edward, 21 Abercromby Place,	1887
	Carmichael, Dr James, 22 Northumberland Street,	1871
	Cattanach, Dr J. G., 3 Alvanley Terrace,	1893
80	Chepmell, Dr Charles, 74 Dyke Road, Brighton,	1887
	Chipman, Dr W. W., University Union, Park Place,	1895
	Christy, Dr Cuthbert, Pryors, Broomfield, Essex,	1893
	Church, Dr H. M., 36 George Square,	1875
	Clark, Dr J. A., 4 Cambridge Street,	1887
85	Cobbett, Dr C. N., 29 Rosslyn Hill, Hampstead, London, N.W.,	1890
	Connel, Dr J., Peebles,	1869
	Cooper, Dr C. M., 9 Marchmont Street,	1897
	Coromilas, Dr Georges P., 47 Minerva Street, Athens, Greece,	1894
	Cox, Dr Joshua J., St Ronan's, Eccles, Manchester,	1876
90	Croudace, Dr J. H., 23 Marston Road, Stafford,	1878
	Cullen, Dr G. M., 48 Lauriston Place,	1890
	Cumming, Dr A. S., 18 Ainslie Place,	1885
	Cunninghame, Dr John, Port Chalmers, New Zealand,	1888
	Currie, Dr A. S., 81 Queen's Road, Finsbury Park, London, N.,	1882
95	Darling, Dr T. Brown, 13 Merchiston Place,	1884
	Davidson, Dr D. G., 18 Granville Terrace,	1892
	Davies, Dr E. T., 97 Shaw Street, Liverpool,	1887
	Dendle, Dr Frank, Lochgelly, Fife,	1892
	Deverell, Dr H. C., 12 Windsor Street,	1882

		Date of Admission.
100	Dewar, Dr M., 24 Lauriston Place,	1891
	Dick, Dr J. L. Cradoch, Cape Colony, South Africa,	1892
	Dickson, Dr George, 9 India Street,	1867
	Dobie, Dr D. R., Coldstream,	1894
	Donald, Dr C. W., 11 Braid Road,	1895
105	Douglas, Dr Carstairs, 2 Royal Crescent, Glasgow,	1890
	Drumheller, Dr F. E., 406 Market St., Sunbury, Pennsylvania,	1887
	Dubourg, Dr J. R. H., 120 Islington, Liverpool,	1887
	Duncan, Dr A. J., Nethergate House, Nethergate, Dundee,	1879
	Duncan, Dr A. S., Eversley, Penge, London, S.E.,	1890
110	Dunlop, Dr H. M., 20 Abercromby Place,	1884
	Dunsmure, Dr J., 53 Queen Street,	1876
	Easterbrook, Dr A. M., Gorebridge,	1893
	Easterbrook, Dr C. C., Morningside Asylum,	1892
	Easton, Dr Thomas, 5 Marchmont Street,	1894
115	Eden, Dr T. Watts, 6 Manchester Square, London, W.,	1888
	Edington, Dr D. C., Alva,	1897
	Elder, Dr George, 7 Leopold Place,	1893
	Elder, Dr W. Nicol, 6 Torphichen Street,	1879
	Evans, Dr O. F., 71 Mulgrave Street, Liverpool,	1890
120	Eyres, Dr Hugh, Catterick, Yorkshire,	1896
	Farquharson, Dr J. D., 242 Westgate Road, Newcastle-on-Tyne,	1890
	Farquharson, Dr J. M., 2 Coates Place,	1894
	Felkin, Dr R. W., 6 Crouch Hall Road, Crouch End, London, N.	1884
	Ferguson, Dr J. Haig, 25 Rutland Street,	1885
125	Ferguson, Dr R. T., Anstruther, Fife,	1895
	Finlay, Dr W. A., St Helen's, Russell Place, Trinity,	1880
	Foggin, Dr George, 8 Saville Row, Newcastle-on-Tyne,	1892
	Forbes, Dr J. C., Northfield, Liberton,	1898
	Forde, Dr E. S., Dalry, Galloway,	1893
130	Fordyce, Dr William, 20 Charlotte Square,	1888
	Fothergill, Dr W. E., 200 Oxford Road, Manchester,	1894
	Forrister, Dr C. C., 12 Greenhill Place,	1898
	Foulis, Dr James, 34 Heriot Row,	1878
	Fowler, Dr Simson C., Juniper Green,	1892
135	Fox, Dr James S., 6 Baldwin Street, St Helen's,	1889
	Fox, Dr J. W., 68 Lupus Street, Pimlico, London, S.W.,	1887
	Fraser, Dr H. E., Royal Infirmary, Dundee,	1892
	Fraser, Dr J. Hossack, Bellfield, Bridge of Allan,	1895
	Fraser, Dr J. Joynor, Hessle, East Yorks,	1880
140	Fraser, Dr Nutting S., 205 Gower Street, St John's, Newfoundland,	1887
	Freeland, Dr Richard, Broxburn,	1879
	Garbutt, Dr W. J., 41 Albany Street, Leith,	1897
	Gayton, Dr William, Bartram Lodge, Fleet Road, Hampstead, London, N.W.,	1885
	Gemmell, Dr J. E., 12 Rodney Street, Liverpool,	1885
145	Gibson, Dr E. Arthur, 2 Queen's Crescent, Glasgow,	1897
	Gibson, Dr W. Scott, 34 Dulwich Road, Herne Hill, London, S.E.,	1890
	Giffen, Dr J. J. M., 129 Boughton, Chester,	1892
	Giles, Dr A. B., 1 Kew Terrace,	1891
	Gilmour, Dr T. F., Port Ellen, Islay,	1882
150	Glaister, Prof. John, 4 Grafton Place, Grafton Square, Glasgow,	1879
	Goldie, Dr W. H., Auckland, New Zealand,	1897
	Gracie, Dr C. B., Buccleuch Villa, Burntisland,	1885
	Graham, Dr A., Curriebank, Currie,	1897
	Graham, Dr D. J., 8 Gilmore Place,	1895
155	Graham, Dr F. M., Willowbridge, Market-Drayton,	1894
	Graham, Dr J. Gibson, 17 Ashton Ter., Dowanhill, Glasgow,	1888
	Graham, Dr R. Balfour, Leven, Fife,	1893
	Grant, Dr Lewis, 245 Boundary Street, Liverpool,	1896

		Date of Admission.
	Grasett, Dr F. L., 208 Simcoe Street, Toronto, Canada,	1877
160	Gray, Dr H. St Clair, 25 Lynedoch Street, Glasgow,	1891
	Greene, Dr T. W. N., Avoca Lodge, Freestone Road, Southsea,	1889
	Gregory, Dr W. H., North Bar Without, Beverley, Yorks,	1893
	Gulland, Dr G. L., 6 Alva Street,	1890
	Guthrie, Dr A. Cowan, 171 Constitution Street, Leith,	1888
165	Hamilton, Dr J. R., Hawick,	1879
	Hamp, Dr J. Walton, Penn Road, Wolverhampton,	1886
	Hardie, Dr Thomas, 10 John's Place, Leith,	1870
	Harvey, Dr Charles E., Kingswood, Sav-la-Mar, Jamaica, W.I.,	1889
	Harvey, Dr James, 7 Blenheim Place,	1891
170	Haultain, Dr F. W. N., 17 Rutland Street,	1884
	Havelock, Dr J. G., Sunnyside, Montrose,	1888
	Hay, Dr Henry, 7 Brandon Street,	1879
	Helm, Dr J. H., Ratho,	1888
	Helm, Dr R. Dundas, 3 Alfred Street N., Portland Sq., Carlisle,	1892
175	Helme, Dr G. Edgar, Gloucester House, Rusholme, Manchester,	1895
	Henderson, Dr Alexander, 21 Pitt Street,	1891
	Henderson, Dr John, 7 John's Place, Leith,	1857
	Hewetson, Dr J., Holmfield, Reigate,	1881
	Hindmarsh, Dr Edwin, Mozufferpore, Tirhoot State Railway, Bengal, India,	1895
180	Hirst, Dr George S. S., Wolvey Abbey, Hinckley, Leicestershire,	1894
	Hoggan, Dr R., Bessville, Liberton,	1894
	Hooper, Dr J. W. D., 70 Collins Street, Melbourne, Australia,	1884
	Hughes, Dr H. L., Gwernllwyn House, Dowlais, Glamorganshire,	1894
	Hughes, Dr P. T., Holy Trinity Vicarage, Darlington,	1895
185	Hunter, Dr George, 33 Palmerston Place,	1881
	Husband, Dr William, 4 Royal Circus,	1857
	Hutcheson, Dr J., 44 Moray Place,	1888
	Hutchison, Dr Robert, Toynbee Hall, Whitechapel, London, E.,	1898
	Inch, Dr Robert, Gorebridge,	1887
190	Isard, Dr O. H., 18 St Peter's Road, Croydon, Surrey,	1896
	Jamieson, Dr Hugh, 13 Lauriston Place,	1889
	Jamieson, Dr James, 43 George Square,	1866
	Jardine, Dr Robert, 5 Clifton Place, Glasgow, W.,	1897
	Johnston, Dr William, Pitt Terrace, Stirling,	1871
195	Keiller, Prof. Wm., 1523 Thirty-first Street, Galveston, Texas, U.S.A.,	1890
	Ker, Dr C. B., City Fever Hospital,	1894
	Kerr, Dr J. M. Munro, 28 Berkeley Terrace, Glasgow,	1894
	King, Dr J. K., The Glen Springs Sanitorium, Watkins, New York, U.S.A.,	1884
	Kirk, Dr Robert, Bathgate,	1887
200	Kynoch, Professor Campbell, 8 Airlie Place, Dundee,	1892
	Lackie, Dr James, Randolph Crescent,	1889
	Laing, Dr J. H. A., 11 Melville Street,	1891
	Langwell, Dr H. G., 49 Charlotte Street, Leith,	1891
	Lee, Dr Herbert E., Gunnedah, N.S.W., Australia,	1892
205	Leigh, Dr J. Dickinson, The White House, Brotton, Yorkshire,	1886
	Leith, Dr Robert M., Provincial Hospital, Port Elizabeth, Cape Colony, South Africa,	1896
	Liddell, Dr J., North View, Victoria Avenue, Harrogate,	1893
	Linton, Dr John, 60 George Square,	1863
	Linton, Dr Simon, Grangemouth,	1887
210	Littlejohn, Dr Harvey, 11 Stafford Street,	1890
	Livingstone, Dr G. R., Rotunda Hospital, Dublin,	1898
	Lockhart, Dr F. A. L., 38 Bishop Street, Montreal, Canada,	1890
	Lucas, Dr Robert, Dalkeith,	1871
	Lundie, Dr William, 3 Glengyle Terrace,	1888
215	Lyle, Dr F. W., 39 The Avenue, Castle Hill, Ealing, London, W.,	1890
	M'Call, Dr John, 4 Leopold Place,	1886

		Date of Admission.
	M'Callum, Dr H., Kinloch-Rannoch,	1887
	M'Cann. Dr F. J., 5 Curzon Street, Mayfair, London, W.,	1896
	M'Creadie, Dr William, 164 Ferry Road,	1887
220	Macdonald, Dr Alexander, 11 Ardmillan Terrace,	1898
	Macdonald, Dr Angus, 9 Glengyle Terrace,	1897
	Macdonald, Dr D. G. Gordon, 26 King Street, Aberdeen,	1896
	Macdonald, Dr W. B., 2 Bayswell, Dunbar,	1887
	Macdonald, Dr W. Fraser, 16 Buckingham Ter., Glasgow, W.,	1884
225	MacGregor, Dr A. V., Milton House, Milton Road, Hartlepool,	1895
	Macgregor, Dr G. S., 2 Burnbank Terrace, Glasgow,	1888
	Mackay, Dr George, 74 Bruntsfield Place,	1879
	M'Kenley, Dr W. H., 137 West 26th Street, New York,	1893
	Mackenzie, Dr R., Napier Villa, 2 Morningside Road,	1887
230	M'Kerron, Dr R. Gordon, 143 Union Street, Aberdeen,	1896
	Mackin, Dr Patrick, 102 Cuba St., Wellington, New Zealand,	1895
	Mackness, Dr G. O. C., Fort Street House, Broughty-Ferry,	1887
	M'Lean, Dr Archibald, Crosshouse, Kilmarnock,	1890
	Macmillan, Dr John, 27 Warrender Park Road,	1897
235	M'Murtry, Dr L. S., 231 West Chesnut Street, Louisville, Kentucky, U.S.A.,	1889
	M'Nab, Dr John, Bunessan, Oban,	1873
	MacRae, Dr John, Lynwood, Murrayfield,	1893
	Macvie, Dr S., Chirnside,	1881
	M'Watt, Dr John, Morelands, Duns,	1879
240	Macwatt, Dr R. C., 7th Bengal Cavalry, care of Messrs King, King & Co., Bombay,	1885
	Maddox, Dr Ralph H., I.M.S., care of Messrs William Watson & Co., 28 Apollo Street, Bombay,	1887
	Mair, Dr Robert, Oliver Crescent, Hawick,	1897
	Malcolmson, Dr Harold, Marine Parade, Holywood, Co. Down.,	1898
	Mann, Dr F. W., 266 Katherine Street, Ashton-under-Lyne,	1889
245	Marshall, Dr G. Balfour, 19 Sandyford Place, Glasgow,	1891
	Marshall, Dr William, Milnathort,	1884
	Martin, Dr Charles, 35 George Road, Edgbaston, Birmingham,	1892
	Martin, Dr Christopher, 35 George Rd., Edgbaston, Birmingham,	1888
	Martin, Dr J. W., Burnfoot, Cluden, Dumfries,	1887
250	Martine, Dr W. R., Weston, Haddington,	1896
	Matheson, Dr A. A., 41 George Square,	1887
	Matheson, Dr Roderick M., 16 Finch Road, Douglas, Isle of Man,	1897
	Matthew, Dr Alexander, Corstorphine,	1885
	Menzies, Dr David, 20 Rutland Square,	1877
255	Messer, Dr Fordyce, Helensburgh,	1866
	Michael, Dr Gustave, 16 Finsbury Square, London, E.C.,	1885
	Millard, Dr W. W., 3 George Place,	1884
	Miller, Dr W. H., 51 Northumberland Street,	1886
	Milligan, Dr D., 11 Palmerston Place,	1893
260	Milne, Dr W. M., 27 Newington Road,	1898
	Mitchell, Dr G. B., 1 Skinner Street, Whitby,	1893
	Montgomery, Dr John, The Highlands, Balsall Heath, Birmingham,	1895
	Moore, Dr E. Coleman, 2 Coates Place,	1893
	Moorhouse, Dr J. Ernest, 9 Victoria Square, Stirling,	1892
265	More, Dr James, Rothwell, Kettering, Northampton,	1880
	Morison, Dr Albert E., Brougham Terrace, Hartlepool,	1888
	Morris, Dr S. Glanville, Plâs Cwmtwrch, Nantgaredig, South Wales,	1894
	Mowat, Dr John, 6 Buccleuch Place,	1884
	Munro, Dr A. Watson, 183 Liverpool Street, Sydney, Australia,	1892
270	Murray, Dr A. Lang, 32 Duddingston Park, Portobello,	1889
	Murray, Dr D. R., 41 Albany Street, Leith,	1878
	Murray, Dr James, 1 Brandon Street,	1879
	Murray, Dr R. Milne, 11 Chester Street,	1880

		Date of Admission.
	Nairne, Dr J. Stuart, 141 Hill Street, Garnethill, Glasgow,	1889
275	Napier, Dr A. D. L. The General Hospital, Adelaide, South Australia,	1878
	Narayan, Mr Kumar B., Cooch Behar, India,	1888
	Nesham, Dr T. Cargill, 12 Ellison Place, Newcastle-on-Tyne,	1885
	Nisbet, Dr W. B., Townsville, N. Queensland, Australia,	1886
	Oakes, Dr Arthur, Craycombe, Mount Hermon, Woking,	1879
280	Ogilvy, Dr Stewart Grant, 12 Graham Street,	1895
	Oliphant, Dr E. H. Lawrence, 23 Newton Place, Glasgow,	1885
	Orr, Dr John, 6 Egerton Road, Monton, Manchester,	1887
	Orr, Dr W. Basil, 13 Braid Road,	1889
	Pairman, Dr T. Wyld, H.M. Prison, Lyttelton, New Zealand,	1883
285	Paterson, Dr. G. Keppie, 19 Albany Street,	1882
	Paterson, Dr G. W. Simla, 2 Glengyle Terrace,	1896
	Paterson, Dr William, Millbrae Road, Langside, Glasgow,	1890
	Peddie, Dr H. Anderson, 24 Palmerston Place,	1882
	Pereira, Dr A. A. Jervis, Surgeon to the Delagoa Bay Railway, Lourenço Marques, Delagoa Bay, South Africa,	1888
290	Perigal, Dr A., New Barnet, Herts,	1887
	Peters, Dr James A.,	1892
	Pirie, Dr John, 15 Ardmillan Terrace,	1888
	Playfair, Dr John, 5 Melville Crescent,	1873
	Poole, Dr T. D., Poulton-le-Fylde,	1890
295	Porrit, Dr E. E., Royal Medical Society, 7 Melbourne Place,	1897
	Porteous, Dr J. Lindsay, 83 Warburton Avenue, Yonkers, New York,	1875
	Potts, Dr W. A., 160 Hagley Road, Birmingham,	1897
	Price, Dr A. W. Gordon, 9 Grange Road,	1890
	Price, Dr E. F. T., 1 Middleby Street,	1890
300	Primrose, Dr Alex., 196 Simcoe Street, Toronto, Canada,	1887
	Pringle, Dr J. Hogarth, 172 Bath Street, Glasgow,	1886
	Proudfoot, Dr Thomas, 30 Lauriston Place,	1884
	Rattray, Dr A. M. T., Portobello,	1869
	Reid, Dr W. L., 7 Royal Crescent, Glasgow, W.,	1880
305	Reid, Dr W. Spence, Oakley, Kirkcudbright,	1880
	Rendell, Dr Herbert R., P.O. Box 606, St John's, Newfoundland,	1882
	Richardson, Dr William, Cotham Grove, Bristol,	1888
	Ritchie, Dr A. Brown, 117 Boston Street, Hulme, Manchester,	1892
	Ritchie, Dr James, 22 Charlotte Square,	1880
310	Ritchie, Dr R. Peel, 1 Melville Crescent,	1861
	Roberton, Dr Ernest, Auckland, New Zealand,	1887
	Roberts, Dr Ernest T., 75 Skipton Road, Keighley,	1890
	Roberts, Dr R. W., Cattybrook Villa, Cwmavon, near Port Talbot, South Wales,	1894
	Robertson, Dr John A., Matjesfontein, Cape Colony, South Africa,	1892
315	Robertson, Dr Robert, 34 Raeburn Place,	1897
	Robertson, Dr W. B., St Anne's, Thurlow Park Road, West Dulwich, London, S.E.,	1870
	Robertson, Dr W. G. Aitchison, 26 Minto Street,	1889
	Robins, Dr H., Sav-la-Mar, Jamaica, W.I.,	1893
	Robinson, Dr H. Shapter, Talfourd House, 78 Peckham Road, Camberwell, London, S.E.,	1890
320	Robson, Dr B. S., 66 Brighton Grove, Newcastle-on-Tyne,	1887
	Ronaldson, Dr T. R., 8 Charlotte Square,	1877
	Rosa, Dr Albert F., 20 Dundonald Street,	1893
	Russell, Dr W., 3 Walker Street,	1890
	Sapara, Dr Oguntola, Lagos, W. C. Africa,	1895
325	Saunders, Dr F. A., Grahamstown, Cape Colony, South Africa,	1885
	Schofield, Dr L. J., Warrensburg, Mo., U.S.A.,	1893
	Scott, Dr T. R., Musselburgh,	1880

		Date of Admission.
	Shaw, Dr W. J., Cockburnspath,	1892
	Simpson, Dr W. Petrie, The Elms, Coningsby,	1892
330	Simson, Dr Harry, 13 Grosvenor Street,	1897
	Sloan, Dr Allen T., 22 Forth Street,	1893
	Sloan, Dr S., 5 Somerset Pl., Sauchiehall St. West, Glasgow,	1887
	Smart, Dr David, 74 Hartington Road, Sefton Park, Liverpool,	1882
	Smith, Dr G. H. Walton, Pendower, Oxford St., Paddington, Sydney, Australia,	1892
335	Smith, Dr Gains T., Moncton, New Brunswick, Canada,	1891
	Smith, Dr James, 1 Parsonsgreen Terrace,	1891
	Smith, Dr John, Brycehall, Kirkcaldy,	1885
	Smith, Dr J. Gordon, Akuse, Accra, Gold Coast, West Africa,	1892
	Smith, Dr William, 14 Hartington Gardens,	1890
340	Smith, Dr W. Ramsay, The General Hospital, Adelaide, South Australia,	1892
	Sneddon, Dr William, Cupar-Fife,	1888
	Somerville, Dr Robert, Galashiels,	1881
	Spalding, Dr William, Gorebridge,	1867
	Spence, Dr R., Burntisland,	1878
345	Spence, Dr William, Dollar,	1884
	Stephen, Dr W. A., Loftus-in-Cleveland, Yorkshire,	1894
	Stephenson, Dr W. H., 137 Rochdale Road, Harpurhey, Manchester,	1895
	Stevens, Dr John, 2 Shandon Street,	1894
	Stewart, Dr J. S., 15 Merchiston Place,	1884
350	Stewart, Dr R., 42 George Square,	1885
	Stirling, Dr R., 4 Atholl Place, Perth,	1892
	Stirling, Dr Stewart, 4 Coates Crescent,	1866
	Story, Dr B. S., 26 Cowbridge Road, Canton, Cardiff,	1898
	Sturrock, Dr J. F., Arima, Broughty-Ferry,	1887
355	Sym, Dr A. C., 144 Morningside Road,	1885
	Taylor, Dr David R., St Helen's, Ayton,	1896
	Taylor, Dr William, 12 Melville Street,	1868
	Taylor, Dr W. Macrae, 12 Melville Street,	1895
	Teacher, Dr C., 16 Newington Road,	1887
360	Temple, Dr G. H., Ailanthus, Weston-super-Mare,	1888
	Thatcher, Dr C. H., 8 Melville Crescent,	1877
	Thin, Dr Robert, 38 Albany Street,	1891
	Thom, Dr Alexander, Viewfield, Crieff,	1884
	Thompson, Dr James L., Hospital for Insane, Ararat, Victoria, Australia,	1894
365	Thomson, Dr A. D. R., Musselburgh,	1877
	Thomson, Dr James, David Place, Jersey,	1881
	Thomson, Dr John, 14 Coates Crescent,	1887
	Thomson, Dr J. Stitt, The Mount, Lincoln,	1877
	Thyne, Dr T. J., 2 Dean Terrace,	1887
370	Tod, Dr John, 93 Ferry Road, Leith,	1892
	Tristan, Dr R. J., 28 Carolgate, Retford, Notts,	1887
	Underhill, Dr C. E., 8 Coates Crescent,	1872
	Underhill, Dr Frederick T., 1373 Barclay Street, Vancouver, British Columbia,	1885
	Underhill, Dr T. Edgar, Dunedin, Barnt Green, Worcestershire,	1879
375	Vassie, Dr Alexander H., 98 Priory Road, West Hampstead, London, N.W.,	1891
	Vickery, Dr W. H., 52 Elswick Road, Newcastle-on-Tyne,	1892
	Wade, Dr George, Melrose,	1893
	Walker, Dr Andrew, Sandon House, Brunswick Street, Sheffield,	1893
	Walker, Dr A. Wallace, 24 Forth Street,	1886
380	Wallace, Dr Abraham, 39 Harley Street, London, W.,	1879
	Watson, Dr Douglas C., 22 Coates Crescent,	1897
	Watson, Dr P. H., 72 Jesmond Road, Newcastle-on-Tyne,	1887
	Watson, Dr R. H., Burnlea, Bent Road, Hamilton,	1896

		Date of Admission.
	Waugh, Dr John, 36 Finsbury Pavement, London, E.C.,	1881
385	Webster, Dr A. D., Belleville Lodge, S. Blacket Place,	1881
	Webster, Dr J. C., 287 Mountain Street, Montreal,	1889
	Welby, Dr Frederick E., Colonial Surgeon, St Helena,	1889
	Whyte, Dr J. Curtis, Dalkeith,	1896
	Wilcockson, Dr G. Morton, 183 Southampton Street, Reading,	1893
390	Wilkie, Dr James, Selville House, Portobello,	1897
	Wilkinson, Dr George, 109 Park Road, Liverpool,	1889
	Will, Dr Ogilvie, 379 Union Street, Aberdeen,	1867
	Williams, Dr J. D., 20 Windsor Place, Cardiff,	1889
	Wilson, Dr James, 53 Inverleith Row,	1889
395	Wilson, Dr T. D., 10 Newington Road,	1879
	Wise, Dr Robert, 5 Weston Park, Crouch End, London, N.,	1890
	Wood, Dr Russell, 9 Darnaway Street,	1880
	Wood, Dr Thomas, 55 Ferry Road,	1886
	Wood, Dr William, 19 Roxburgh Street,	1892
400	Wright, Dr W. F., Bonnington Mount, Bonnington Terrace,	1887
	Yoe, Dr Richard T., 2103 Floyd Street, Louisville, Kentucky, U.S.A.,	1891
	Young, Dr Peter, 43 Heriot Row,	1859
	Young, Dr Peter A., 25 Manor Place,	1871
404	Young, Dr R. J. Erskine, 8 Alva Street,	1892

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TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY,

FOR SESSION LIX., 1897–98.

MEETING I.—NOVEMBER 10, 1897.

Dr ALEX. BALLANTYNE, *President, in the Chair.*

I. *The Treasurer* (*Dr W. Craig*) made his Annual Statement, which is given below:—

INCOME.

Balance from Session 1895–96,				£321	13	1
Arrears,	£6	0	0			
Bank Interest on Deposit Receipts,	1	11	4			
Interest on Consols,	6	15	4			
Entrance Fees from 20 new Ordinary Fellows	21	0	0			
Annual Contributions from 355 Ordinary Fellows,	88	15	0			
Composition for Life-Membership from 3 Ordinary Fellows,	15	15	0			
One copy Vol. IV. of Transactions sold,	0	9	8			
				140	6	4
				£461	19	5

EXPENDITURE.

Bank Cheque-book,	£0	1	0			
Commission to Collector,	1	7	9			
Stamped Envelopes,	3	4	1			
Door-keeper's Salary, 8 Meetings,	1	0	0			
Carriage of Parcels, etc.,	0	1	6			
Oliver & Boyd's Account for Vol. XXII. of Society's Transactions (500 copies),	56	12	6			
Oliver & Boyd's Account for Printing Billets, Postages, etc.,	23	6	2			
Rent of Rooms at 5 St Andrew Square,	4	10	0			
Waterston & Sons' Account,	1	17	0			
The Secretaries and Editor for Postages,	1	1	0			
				£93	1	0
Balance to New Account,[1]				368	18	5
				£461	19	5

[1] Of this Balance the sum of £250, 10s. 6d. is invested in 2¾ per cent. Consols.

The Treasurer's Accounts were audited by Professor Simpson and Dr James Ritchie, and found correct, and on the motion of *Professor Simpson* a cordial vote of thanks was unanimously accorded to Dr Craig by the Fellows of the Society.

II. The Society then proceeded to the election of Office-bearers for the present session, and the President announced the result as follows:—*President*, Dr J. Halliday Croom; *Vice-Presidents*, (*Senior*) Dr R. Milne Murray, (*Junior*) Dr N. T. Brewis; *Treasurer*, Dr Wm. Craig; *Secretaries*, Dr J. Haig Ferguson and Dr W. Fordyce; *Librarian*, Dr R. Milne Murray; *Editor of Transactions*, Dr J. W. Ballantyne; *Members of Council*, Dr J. B. Buist, Dr W. N. Elder, Dr Hamilton (Hawick), Dr Fraser Wright, Professor Simpson, Dr Alex. Ballantyne, Dr Melville Dunlop, Dr F. W. N. Haultain.

III. The following gentlemen were elected Ordinary Fellows of the Society:—H. S. Ballantyne, M.B., C.M., B.Sc., Ashton, Eskbank; E. E. Porrit, M.B., C.M., City Hospital.

IV. The resignation of Dr Harkness, Market Drayton, was intimated and accepted.

V. VALEDICTORY ADDRESS: RESPONSIBILITIES OF THE MEDICAL ATTENDANT IN OBSTETRICAL AND GYNECOLOGICAL CASES.

By Alex. Ballantyne, M.D., F.R.C.P.E.

Gentlemen,—The time has come for me to vacate this chair, which two years ago your kindness and goodwill did me the very great honour to ask me to occupy, and which by your courteous forbearance you have allowed me to fill till now.

The change of Presidents marks off, perhaps, more than anything else, distinct periods in the history of the Society, and is usually taken advantage of by the retiring President as a time for a more or less complete stocktaking.

In a valedictory address it seems peculiarly appropriate that we should first of all glance over our list of Fellows and note the names of those touched by the effacing finger of death. That now, when they have bid farewell to this life, we should keep in grateful remembrance what they did for us and for our profession. Young and old, and of many nationalities, they make up an unusually large number at the end of my Presidency. We have to deplore the loss of no fewer than seven of our Honorary, two of our Corresponding, and eleven of our Ordinary Fellows.

Dr George Battey.

Just two years ago our Society was made the poorer by the death of Dr George Battey of Rome, Georgia, whose name will

remain notable as long as Gynecology exists, as fortunately the name 'Normal Ovariotomy,' which Battey gave to the operation now bearing his name, was universally condemned.

The extirpation of the ovaries for otherwise incurable disease, apparently suggested itself to his mind after the prolonged study of a single case of amenorrhœa from absence of the uterus, with intense suffering at the menstrual periods, ultimately exhausting the patient and causing death. He regarded the fatal issue as the result of an excessive menstrual molimen unrelieved by menstruation. Hence he conceived the idea that by removing the ovaries he would produce an artificial menopause, and by its production relieve or cure the patient. Although the conjecture was erroneous which led him to propose the operation, the procedure itself has been, as we know, successful in effecting a cure in suitable cases. As with all innovations, when the proposition was made by him, it encountered great opposition, and apparently received no encouragement; yet so convinced was he that it was right, that when he had a second case presenting similar symptoms, he, in August 1872, removed both ovaries by Abdominal Section. Fortunately, the result was recovery of the patient and her complete restoration to health. The subsequent success of this method of dealing with such cases is a matter of medical history. Marion Sims, but most prominently, Lawson Tait, placed its safety and utility beyond a doubt. Perhaps in these days when ovaries are got rid of on comparatively slender pretexts, it is well to bear in mind that Battey stated emphatically that the operation should only be done as a *dernier ressort.* 'This much,' he says, 'is due to the dignity of our calling; this much is due to humanity, to decency, and to public morality.'

It is interesting for us to remember that Dr Battey was a guest at our meeting in July 1881, and that he then detailed a case of extra-uterine pregnancy upon which he had operated.

Sir Thomas Spencer Wells.

The name of another Honorary Fellow, and of a still greater Gynecologist than Battey, appears in our death list. The prolonged struggle, which finally ended in the general adoption of Ovariotomy as the only way of dealing effectively and even safely with cystic disease of the ovaries, is long since passed, and the last remaining and most conspicuous of its early advocates, Sir Thomas Spencer Wells, died in the end of January of this year. All who know the history of this operation must acknowledge the very great share Wells had in popularising it and inducing others to perform it.

Before 1858, when Wells did his first completed ovariotomy, Clay in England, beginning in 1842, and the two Atlees in America—John in 1843, and his more famous brother Washington in 1844—had continued, in the face of all opposition, to carry on an

unchecked career of operating as suitable cases presented themselves.

Many others had done the operation, some several times—but either disheartened by failure, or from the want of cases or lack of opportunity, nothing of any moment had been done anywhere before 1842, excepting always the series of cases operated upon by the Father of Ovariotomy, Ephraim M'Dowell, in the early part of the century. And even up to the time Wells began to operate, Clay and the two Atlees almost alone fought for the very existence of the operation. Of this trio, America even acknowledges in the person of Peaslee in 1872, that 'to Dr Charles Clay of Manchester, however, more than to all other operators, the credit belongs of having placed the operation of Ovariotomy upon a sure foundation, and at length overcome the opposition in England to Ovariotomy in his fairness in reporting his cases, in his scholarship, and especially by his success.'

Two years before Wells began, Clay had performed the operation seventy-one times, with an average of seventy-five per cent. recoveries in his last thirty-one cases. With this average also he ended his career as an Ovariotomist after performing the operation four hundred times.

In 1854, Wells, previously an assistant-surgeon in the Royal Navy, was appointed to the Samaritan Hospital, and had assisted Baker Brown in his eighth case of Ovariotomy, which ended fatally.

When the Crimean war broke out he again joined the Navy, but became attached to the Army, and there learned, to quote his own words, 'that a man's abdominal walls might be lacerated by fragments of shell, his intestines protruding and covered with mud, so remaining for several hours, and yet, after careful cleansing of the cavity, and accurate closure of the wounds, complete recovery was possible,' which, he adds, 'made him much less afraid of abdominal wounds.'

This experience doubtless neutralised to some extent the depressing effect of the knowledge that Baker Brown, whom he had previously assisted in his eighth case, had had seven deaths out of nine ovariotomies. Probably, also, it led him to think of the feasibility of the operation, and induced him to journey to Manchester in 1857, and to be present at one of Clay's operations. At this visit he made many inquiries, and subsequently corresponded with Clay about the operation. Having then, as has been said, ascertained by observation in the Crimea (what indeed Blundell, more than twenty years before, had been assured of from experiment, and had stated 'that the peritoneum was more tolerant of injuries than was generally supposed'), and favourably impressed by seeing Clay operate, and by his interview and correspondence with him, he, in the end of 1857, essayed to operate. This operation, however, was uncompleted—Baker

Brown apparently dissuading him from going on with it. In February 1858, he completed his first ovariotomy, and was congratulated by West on its complete success.

In judging of Wells' career as an Ovariotomist, the time, place, and circumstances in which his operations were performed must be kept in view. Undoubtedly these were all favourable to the man who could command success. 'Is there any one,' says John Hunter, 'whom difficulties dishearten and bend to the storm? that man will do little. Is there any one who will conquer? that man never fails.' In such a spirit Wells began his work at Ovariotomy. He was fortunate in the time, inasmuch as the great success of Clay was known to those who cared to learn, and he, as we have seen, acquired the knowledge from Clay himself; fortunate in place, where material was plentiful and spectators numerous; and fortunate in the circumstances that he had the whole field to himself, and was already known to a large professional circle in London, who watched his career with interest. Like most epoch-making men, he was energetic, decided, and combative, qualities which fitted him to grapple with any difficulty as well as with great opposition. An accomplished writer, he fought with his pen as powerfully as he demonstrated with his knife. He invited spectators and courted criticism, and spared no labour in reporting his operations and advocating their performance. Everything he acquired from observation or got from others he used for perfecting his results. And so, as he says, 'by careful consideration of all sources of possible danger and by progressive improvements in details,' he, like Clay before him and like all other successful ovariotomists, reduced the death-rate from these operations as his experience increased. As I have already said, two years before Wells began, Clay could show a death-rate of one in four; yet with few exceptions, among whom was Sir James Simpson, who, as you all know, gave the name to the operation in 1844, Clay preached to deaf ears and demonstrated to eyes which would not see. And doubtless the experience of the operation in London, and especially in London Hospitals, as well as many other places in Britain, had been most discouraging. Such was the position of affairs when Wells began.

His early cases were not more successful than the early cases of Clay, yet such publicity did he give them, and with such power did he advocate the claims of the operation, that he compelled men to listen, and at length converted them to his views. And it was this, rather than any exceptional brilliancy of operating or its results, that carried him to the foremost rank of Ovariotomists, and made him, even more than Clay, the great Apostle of Ovariotomy. None can doubt that experience is a most important element of success in all the severer operations, and certainly Ovariotomy is no exception. This experience, in his first few years, Wells had more than any man at that time, doing one hundred and

fourteen Ovariotomies in the first six years of operating. Notwithstanding this, at that time, quite exceptional wealth of experience acquired in so short a time, and the publicity attending it, it may be questioned whether the so-called 'Revival of Ovariotomy' would have come so soon but for the influence of Clay. Wells himself acknowledges that Clay's tables of cases contributed more than any other books and pamphlets to form professional opinion, to awaken interest, and to instruct those who had not before thought upon the subject. And it may also be doubted whether the Revival would have been so complete but for the third strong siding champion, Keith, who began operating in 1862, and whose altogether marvellous results were, according to Sims, 'the wonder and admiration of surgeons all over the world.' In 1866 his superiority over Wells as an operator was shown in the results, that notwithstanding the greater experience of Wells (the most important factor in success, others things being equal), Wells in his first one hundred and fifty cases had forty-seven deaths; while Keith in his first forty-eight cases had only eleven, a result which in some measure prepared the profession for the astounding record of seventy-three ovariotomies without a death, and ninety-seven recoveries out of one hundred cases, verifying what he says, 'that this long-despised operation is now the safest of all the great surgical operations,' while it contrasts in a wonderful way with the result of cases totalled by Dr Gross in 1872, of one thousand four hundred and eight cases collected from various native and foreign sources, which showed a mortality of twenty-four per cent. I regret that leisure is not at my command to ascertain what percentage of deaths there has been of late years, but I have no doubt that now, in 1897, it is still the 'safest of all the great surgical operations.'

Ebb and Flow in the Society.

But Obstetrics have suffered more than Gynecology by the deaths of Dr Kidd of Dublin, Dr Lusk of New York, Dr Pajot of Paris, Dr Stadtfeldt of Copenhagen, and Dr Braxton Hicks of London, all exceptionably able teachers and writers in the department of medicine which they had chosen for their life work. It is impossible for me to do more than name them as well as the two Corresponding Fellows, Dr Martin of Haddington and Surgeon Lieutenant-Colonel Blair Brown. To this already heavy list fall to be added, as I have previously mentioned, no fewer than eleven of our Ordinary Fellows. But while in this we have an abiding sense of loss, we have in our present list of Fellows the welcome assurance that our losses, however great, are not irreparable, and that indeed thirty-five Ordinary Fellows having been elected during my Presidency, the places of those who are gone have been taken by others as well fitted to carry on the work of the Society. A still more convincing proof that

the Society knows no decay, but is full of youthful vigour and lusty life, is seen when we glance over the work done during its 57th and 58th sessions, which differ in no noteworthy detail from those immediately preceding them; rather they show a maintenance and even a development of those characteristics which have in the past made our meetings interesting and our *Transactions* valuable. We have listened to contributions dealing with nearly all the burning questions of the day in both Obstetrics and Gynecology, and we have from time to time been called upon to consider also matters of Pediatric interest. To such of our Fellows as have been unable to be present at our gatherings, these contributions are nevertheless ready to hand in our annual volumes of *Transactions;* while those of us who have assembled in this room have not only heard the papers read, but have also enjoyed the privilege of seeing the many rare and interesting specimens which have been brought before our notice. I may be unduly exaggerating the value of this part of our work, but I feel that those who miss the periodic 'Exhibition of Specimens' lose not a little.

Work done in the past Two Sessions.

To begin at the beginning, we have listened to investigations dealing with the very springs of life, from the fertile pens of Dr D. Berry Hart and Dr J. W. Ballantyne, and in the 'Preliminary Note on the Development of the Clitoris, Vagina, and Hymen,' and in the 'Morphology of the Vaginal Segment of the Genital Tract,' we have had placed before us studies in Embryogenesis of far-reaching importance. Hardly less valuable have been the contributions dealing with Morbid Embryogenesis, or 'Teratogenesis,' as our editor of *Transactions* prefers to call it, and we have followed with interest his 'Inquiry into the Causes of Monstrosities' and into 'The Causation of Twins,' and his paper on 'Congenital Teeth.' We have also to thank him for showing so many Teratological specimens, and for communicating papers dealing with Malformations, from the pens of Dr Rutherford Morison, Günsburg, and Michin. This does not exhaust the contributions which have dealt with embryological and fœtal questions, for Dr Haultain has described 'A Rare Form of Abortion,' Surgeon-Captain C. H. Bedford has written fully on 'Criminal Abortion in the Punjab,' Drs Berry Hart and Buist have related cases of 'Atresia Vaginæ,' and the latter has also detailed an operation for the relief of 'Hernia into the Umbilical Cord.' Neither must we forget Dr Kynoch's paper on 'Fatal Infantile Jaundice from Congenital Narrowing of the Common Bile-duct,' nor Dr Adamson's (communicated by Professor Simpson) on 'A Case of Triplets,' which elicited from other Fellows of the Society the records of not a few interesting instances of prolificacy in the human subject.

The subjects of Pregnancy and Labour have been represented by the able papers of Dr Freeland Barbour on 'Braune's Os Internum and the Retraction Ring,' and on 'Laparotomy for Extra-uterine Gestation;' of Dr R. Milne Murray on 'Forceps with Adjustable Axis-traction,' on 'Deflection and Rotation of the Pregnant and Puerperal Uterus,' and on the 'Positive Pressure in the Growing Pregnant Uterus;' of Dr Mackness on 'Some Modifications of the Midwifery Forceps;' of Dr C. F. Ponder on the 'Action of the Midwifery Forceps;' of Dr Coromilas on the 'Technique of the Dilatation of the Perineum in Labour;' of Dr G. Elder on 'Peripheral Neuritis in Pregnancy;' and of Dr Kynoch on 'Interstitial Pregnancy.' It would have been unpardonable if your President had allowed the Jubilee of Anæsthesia in Obstetrics to pass unnoticed; and he, therefore, attempted to celebrate that event and to inaugurate his own holding of the Presidential Chair by an address on 'Chloroform in Midwifery Practice.'

Morbid phenomena occurring in the puerperium have called forth papers from Dr J. L. Lackie on 'Puerperal Pulmonary Thrombosis,' and from Dr Haultain on the 'Culture Diagnosis and Serum Treatment of Puerperal Infection;' while the duties of the mother as the nurse of her infant were emphasised by Dr James Carmichael in his contribution on 'Indigestion of Breast Babies.'

On the borderland between Obstetrics and Gynecology lay the exhaustive and most admirable work on 'Osteomalacia' by Dr James Ritchie, the able 'Experimental Research into the Action of Viburnum Prunifolium' by Dr T. Shennan, and the successful and original suggestion made by Dr Berry Hart concerning the 'Treatment of Extra-Uterine Gestation at Mid-term by Extra-Peritoneal Incision.'

Gynecology has been enriched by several noteworthy contributions. I need scarcely recall to your minds the splendid record of success obtained by Dr C. Martin in his experience with 'Panhysterectomy,' nor the more recent operative work carried out by Dr Freeland Barbour by means of 'Vaginal Hysterectomy by Doyen's Method.' Dr Halliday Croom showed all his accustomed skill in dealing with a difficult subject when he described that anomalous phenomenon, the 'Mittelschmerz,' and even more so when he opened the discussion on the 'Use of Checks to Conception.' It was peculiarly appropriate that Professor Simpson should be the Fellow to communicate a case of 'Ovariotomy under Local Anæsthesia,' and we should probably have been surprised had not the names of Drs Milne Murray and Haultain been attached to the two eminently practical and able papers dealing with the 'Electrical Treatment of Fibroid Tumours of the Uterus.' In order to complete our survey of the work of these sessions, reference must be made to the important communication on 'Some Peculiar Relations of Abdominal and Pelvic Tumours,' in which Dr Halliday Croom drew upon the vast resources of his extensive operative

experience, to our great benefit. Dr Barbour reported a dermatological curiosity in his paper on 'Ulcus Serpiginosum of the Vulva,' and Dr J. Lamond Lackie dealt with a pathological rarity in his report on 'Retention of Menstrual Fluid in one half of a Double Uterus.' Finally, those who wish to know all about that useful operation, 'Curettage of the Uterus,' will surely find it in Dr J. W. Ballantyne's communication on that subject.

Professional Secrecy.

During my term of office, the last meeting of each session has differed from those of the previous years in so far that it has been held *in camera.*

In reverting to the subject under debate at the first of these meetings, it is not my intention to give a *résumé* of the various opinions expressed, nor even to state what direction the discussion took (for this you can recall as easily as I can), but to endeavour to ascertain what relation Obstetricians and Gynecologists stand to the law, chiefly on the question of professional secrecy. It is granted on all hands that there is much that is uncertain, and much that is unsatisfactory regarding this matter, and that not only medical men but lawyers differ as to when and under what circumstances it becomes the duty of the medical adviser to break faith with his patient.

Theoretically, of course, the doctor is constantly under the Hippocratic oath, that facts, medical or otherwise, which a practitioner learns from his patient during professional attendance should not be divulged. And the law of this country seems clearly to hold that a secret acquired by a medical man during his attendance upon a patient is the secret of the patient, and therefore that he or she has a *prima facie* right in law to require that his or her secret should be kept, unless it can be shown that there is some paramount reason setting aside that right. The law then so far upholds our old professional rule.

Individual judges have from time to time gone even further, and have indicated that medical men should *legally* be under this ancient rule, with certain exceptions. Thus Justice Buller expressed his regret that the information got from medical men was not privileged. Lord Brougham expressed himself in much the same way, and Chief Justice Best said that the law was hard in itself, of questionable policy, and contrary to that of America and France. While Justice Hawkins, in the comparatively recent case of Kitson *v.* Playfair and Wife, said that there were criminal cases, and he instanced one—that of self-inflicted criminal abortion —where it would be 'monstrous cruelty' for the doctor to inform the police, and with regard to those when it was said the doctor should inform, the judge might himself in some cases refuse to commit a medical man for contempt in refusing to reveal confidences. From this it is evident that there are many cases

occurring in medical practice in which a practitioner may be in serious doubt whether he should inform the public prosecutor, and about which any judge in the event of the information being given may express his own individual opinion, adverse or otherwise, as circumstances presented themselves to his mind during a trial.

In America and France the law differs from that of this country, in so far that it binds the doctor to keep his patient's secret. In America, the law binds the professions of the Church, Law, and Medicine equally. According to this legal code, 'the clergyman is prevented from disclosing confessions made to him in his professional character in the course of discipline enjoined by the rules of practice of the religious body to which he belongs. The attorney or counsellor-at-law is not allowed to disclose a communication made by his client to him, or his advice given thereon in the course of his professional employment; and a person qualified to practise physic or surgery is not allowed to disclose any information which he acquired in attending a patient in a professional capacity, and which was necessary to enable him to act in that capacity.' From this it is plain that in America the three professions stand in precisely the same relationship to those seeking their counsel and advice. The law recognises that a certain portion of the community has from circumstances been placed at disadvantage, and is suffering in some way in relation to Religion, Law, or Medicine; that it needs help from some one of these professions, and that it would be wrong to place any obstacle in the way of obtaining it, whether guilty or innocent. The penitent is safe with the priest; the suspected criminal is safe with his attorney and counsel; and the patient is or should be safe with his medical adviser. The members of each profession get necessary information for a special and humane purpose, information they would certainly not have acquired had the simple benefit to the person not been the sole end in view, and which probably would have been withheld but for the seal of professional confidence. And the revisers of the American Code even go further, by stating that the necessity of the law relating to medical men is even stronger than in the case of a legal adviser, when life itself may be in danger. And yet the law which binds a physician to secrecy is very frequently broken by the ruling of its administrators. Thus Judge Bartlett, speaking on the subject of criminal abortion at a meeting of a Medical Society, presided over by Dr Joseph H. Raymond, said 'the rule may be regarded as pretty well settled in this state,—that the physician is compellable by law to disclose (in the witness box, not voluntarily) what he knows indicating the commission of criminal abortion, *where* the victim of that abortion is dead; where the patient, however, survives, and does not waive her privilege, the medical practitioner must keep silent.'

District Attorney Backus, speaking at the same meeting on the same subject, gave it as his opinion that a self-attempted abortion should not be disclosed whether the person lived or died; but where it is done by another, the doctor should endeavour to procure the consent of the patient to inform even though she survives. It is quite evident from these opinions and from cases constantly occurring in American Law Courts, that while the three professions are almost exactly word for word bound under the same law, the medical profession alone is compelled by law to break the law that binds them. Whether this be right is open to question. It is difficult to see in what way the doctor differs from the lawyer and clergyman. Under this law the silence of the medical man cannot be looked upon as concealing a crime; and surely his reticence defeats the ends of justice less than that of the lawyer who, often knowing the guilt of his client and all the circumstances of the crime, uses this knowledge entirely for the benefit of the prisoner, and, by reason of the information, probably gets an effectual means of defence. Yet his conduct is not looked upon as reprehensible, but would certainly be regarded as such if he announced in court that the man had confessed to him that he was guilty of the imputed crime.

In this country the doctor is not privileged, as we have previously said, and this opinion has again been recently confirmed by the answer of counsel to the question of the Royal College of Physicians, London, which ran as follows:—'Has a medical practitioner any privilege with regard to secrets confided to him in the course of his practice analogous to the privilege as between a solicitor and client, or otherwise?' Answer:—'We are of opinion that there is no privilege attaching to statements made to medical practitioner by his patient.' Our profession, then, is not in any degree protected or supported by law, as from time immemorial the legal profession has been; nor has it that tacit protection which is extended to the priest. Yet it is no less true, as we know, that should a doctor disclose any fact to a third party which may affect the character or cause injury to the patient, he would be liable to an action for defamation of character. There are pitfalls innumerable the moment we swerve from the golden rule of absolute reticence. And alas! it is also true that the most rigid adherence to this rule does not always bring safety to the practitioner, and indeed may sometimes land him in an awkward predicament. For example, let us take the hypothetical case instanced by Judge Hawkins at the trial already referred to, in which he remarked it would be 'monstrous cruelty' if the doctor did not keep silence in the criminal case which might come under his observation. Presuming such a case to occur, which it may do at any moment, and the doctor is faithful to his patient and does exactly as Judge Hawkins would have him do,—says

nothing about it, and does the best he can for his patient. Notwithstanding this, she dies from her self-inflicted injuries. No one knows of them but the doctor and his patient, and she is dead. He may properly certify the death as one from Septicæmia. Possibly she may have consulted him about her condition before she was driven to commit the crime which ended her life, and rumour is busy and suspicion is aroused, and the public prosecutor gets hold of the case. A P.M. reveals the injuries which presumably have caused death. Then the question arises, Who would be the more likely person to commit the crime, the patient or the doctor? The procurator and public may think the doctor the more likely, and he may possibly come to be tried for murder, and should such a case come before Judge Hawkins, would he say you have done a monstrous cruelty and are worthy of death, *or* you would have done a 'monstrous cruelty' if you had informed upon this poor woman. In such a case the doctor, according to the judge, deserves to be hanged if he does inform, and may certainly be hanged if he does not.

But to return to the protection of the patient. Not only in this vexed question of criminal abortion, about the reporting of which lawyers and doctors both here and in America take such different views, arising doubtless from the laudable desire to stop the crime and at the same time shield the patient, but many others in which the Obstetrician has difficulty in deciding how to act. In cases of 'concealment of pregnancy,' I presume the medical man would be expected to inform, but to what extent does it differ from that of self-inflicted abortion, and why should the law or we be less careful to protect the poor woman who, in the agonies of labour and great distress of mind, destroys or allows her child to die while coming or having just passed through the maternal passages, than she who has destroyed her child *in utero?* This is surely a legal and altogether arbitrary distinction.

Then there are the cases of pregnancy sometimes with abortion, in women out of wedlock or where the wife has been separated from her husband for a considerable time. In no class of cases perhaps is it more necessary for the medical adviser to remain silent in the interest of the patient and for the protection of himself.

Perhaps the most common experience, and one in which it is most difficult to preserve the secret of the patient, is that in which the practitioner is sent for to see a servant in the employment of a client. Her mistress may or may not be suspicious regarding the nature of the illness, and has employed the practitioner not only to treat the servant but to tell her what is wrong. How should such cases be dealt with? It has been said in justification of breaking the confidence existing between doctor and patient in such cases, that the doctor is acting solely as the professional agent of the employer, and that he was sent for the special purpose of

knowing in what condition she is, and pays him his fee. In such cases there is no justification. Such a supposition is quite fallacious, wrong in principle, unjust, not in accordance with law, and would in many cases be actionable. In such circumstances it is always necessary not only to have full permission of the patient to see and prescribe for her, but also permission to tell her employer what she suffers from.

In the trial of Kitson *v.* Playfair we have a warning how warily the Obstetrician must act in those cases of pregnancy in women long separate from their husbands, even when convinced that a great wrong has been done.

Perhaps no part of the practice of Obstetrics and Gynecology requires more tact and prudence than the management of syphilis and gonorrhœa in married people. It must not be always taken for granted that because a married woman has one or other of these diseases that the husband is the source of infection; and if not so, it would plainly be wrong to allow him to be exposed to the risk, just as much as when the husband is suffering from such complaints we must safeguard the wife, and this we endeavour to do effectively without breaking faith with the patient. The delicate question whether a woman should be told what she suffers from must be determined by the particular circumstances of the case, and whether it be in her interest and for her good that she should know. It sometimes is not. The aim in all such cases being to prevent disease, while at the same time the secret of the patient is kept. Should the practitioner think it his duty to break faith with his patient, he should feel perfectly certain there is strong reason for doing so, sufficient to have weight with both judge and jury. Scarcely less difficult is it to know how to act when such diseases occur in servants and employees, and in these cases the medical practitioner runs greater risk of an action at law should professional confidence be broken. I trust the time is not far distant when the practitioner will be freed from this responsibility by the compulsory notification of all contagious diseases.

But not only is the question of professional secrecy in relation to the law upon an unsatisfactory footing; the law itself as it at present stands is directly opposed to the very frequent practice of the Obstetrician, notwithstanding the assurance of counsel given about two years ago to the Royal College of Physicians, London, 'that the law does not forbid the procurement of abortion during pregnancy or the destruction of the child during labour, where such destruction of life is necessary to save the mother.' But this is only the opinion of counsel—the law remains; and though the illegality of these operations may not be entertained in the law courts, still, 'in the event of the death of the mother, the medical man exposes himself to a prosecution for a criminal offence.' Why then should the law not be amended to run as it does in the

Penal Code of the State of New York. 'A person who, with intent thereby to procure the miscarriage of a woman, *unless* the *same* is *necessary* to *preserve* the *life* of the *woman*, *or* of the *child* with which she is pregnant, is guilty of abortion,' etc.

After what has been said, it must, I think, be admitted that with the law on one side and the patient on the other, the position of the Obstetrician is in a very uncertain state of equilibrium, and that this condition of affairs calls for early re-adjustment. Whether the adoption of a law such as exists in America and France (and it has much to recommend it) should be made is a matter for serious consideration. But whatever may be done, the law should emphasise in some very decided way a patient's legal right of privilege which she only can waive, except—and the law should make the exceptions—in certain well-defined cases. It does so now in the notification of infectious diseases; it may in the future do so in the case of contagious diseases, and it ought to specify in other cases what the doctor must reveal.

As things now are, the public generally think that professional reticence is merely the fastidious rule of a fastidious profession, contrary, as they often signify, to common sense.

But until there is a clearer understanding between the law and the medical profession, and something definite achieved in this direction, the Obstetrician and medical practitioner should bear in mind that it is the duty of the law to detect crime, that the public prosecutor is alone responsible for its proper investigation, and that the duty of the physician is simply to his patient. For his own protection, about which the law thinks nothing, the general practitioner, at least, should never induce premature labour without consultation with another medical man; that in all cases of suspected criminal abortion he should safeguard himself by calling in, as early as possible, another independent medical witness, and that never under any circumstances whatever should he be induced to examine a woman without her full consent, and preferably in the presence of witnesses.

VALETE.

And now the last few moments which end my Presidency are gone, and it only remains for me to reiterate my gratitude for your kindness and for the great honour you have done me.

In my successor you will find not only a much more worthy President, but a familiar friend; one already accustomed to the duties of this chair, and one whom we all delight to honour not only for the work he has done for this Society, but for his high standing as a Gynecologist, Obstetrician, and Teacher.

Dr J. Halliday Croom, in accepting office as President, thanked the Society for the honour again conferred upon him, and at the

same time proposed a vote of thanks to Dr Alex. Ballantyne for his address. This was seconded by *Prof. Simpson*, and carried unanimously.

VI. A paper by *Dr C. F. Ponder*, Kalimpong, entitled NATURAL PARTURITION, WITH A DESCRIPTION OF A NEW INSTRUMENT—THE VECTOR, was communicated by the *Secretary* (*Dr. F. W. N. Haultain*). The instrument was to be used only in those cases where the skeletal framework of the pelvis was normal, and where delay in the descent of the head was caused by rigidity of the vaginal walls and perineum. It consisted of three blades somewhat resembling those of ordinary midwifery forceps, two of them lateral, the third posterior. The cavity of the blades was funnel-shaped, so that it was impossible to grasp the head. The handles of each of the three blades locked together to form a firm composite handle. The main object of the instrument—*the vector*—was to dilate the soft parts of the pelvic outlet, the posterior blade forcing back the perineum. Dilatation being thus artificially produced, Dr Ponder supposed that the expulsive forces would act to greater advantage. He also claimed that the cavity of the blades would guide and protect the fœtal head, without, however, exerting any traction upon it.

MEETING II.—DECEMBER 8, 1897.

Dr J. HALLIDAY CROOM, *President*, and afterwards Dr MILNE MURRAY, *Vice-President, in the Chair.*

I. The following gentlemen were duly elected Ordinary Fellows of the Society:—W. J. Garbutt, M.B., C.M., 41 Albany Street, Leith; Harry Simpson, M.B., C.M., Royal Infirmary, Edinburgh; W. H. Goldie, M.B., C.M., Royal Infirmary, Edinburgh; C. M. Cooper, M.B., Ch.B., Royal Maternity and Simpson Memorial Hospital; W. A. Potts, B.A., C.M., M.B., Royal Hospital for Sick Children, Edinburgh; Angus Macdonald, M.A., M.B., C.M., 9 Glengyle Terrace, Edinburgh.

II. INDUCTION OF PREMATURE LABOUR.

By JOHN MOIR, M.D.

DR DENMAN informs us that in 1786 there was a solemn conclave of the principal medical men in and around London, to report on the morality, safety, and utility of this operation.

Should there exist any doubt as to the answer to this question being favourable, it should, I think, be removed by the perusal of the following cases. At the time when I commenced my medical education in 1824, the advantages of the Maternity Hospital were

confined to the students attending the class of the University Professor, Dr James Hamilton, and this continued until his death in 1840. My father was attached to the Hospital as surgeon, and I entered the midwifery class in 1824 as a perpetual pupil. I had thus the advantage of witnessing, and, further on in the course of time, of taking part in most of the difficult or interesting cases that occurred during these years. After the election of the late Sir James Simpson to the Midwifery Chair, he, of course, took a large share in the supervision and assistance of the students in difficult cases, and at the same time the advantages of the Maternity Hospital, as in the case of the Royal Infirmary, were opened up to all medical students.

So much to show how it was that a goodly number of cases requiring interference and assistance came under my special notice.

Before detailing the practice recommended by Prof. Hamilton in the induction of premature labour, it may be right to mention that Baudeloque and many of the French obstetricians in those days objected to its *utility* on the ground that the os and cervix, being incompletely developed and prepared for labour before the full period of utero-gestation, the force necessary to overcome the increased difficulty would necessarily destroy the child from the pressure on the navel string. Dr Merriman seems to confirm this view as the result of his experience as recorded in the third volume of the *London Medico-Chirurgical Transactions*, a large number of the children being still-born. This may reasonably be accounted for by the practice then in use of puncturing the membranes to secure the discharge of the liquor amnii, and of then waiting for the labour pains. Dr Hamilton discountenanced the rupture of the membranes, especially at this early stage, and advised that they should be kept entire for the sake of the child. He separated them from the uterus around the os, and if labour did not supervene in two or three days, he recommended that a small portion only of the liquor amnii should be drawn off. When adopting this proceeding I have always used a male silver catheter, the point of which was cut off. The instrument is gently insinuated between the uterus and membranes for from 2 to 4 inches. The point of the catheter is then turned towards the membranes and the stilette pushed forward so as to puncture them and allow of the flow of a few ounces (two or three) along the catheter, which is then withdrawn. The pressure of the uterine walls on the slight puncture prevents any further discharge. He also recommended, as a means of inducing labour pains, the slipping up of an elastic catheter between the uterus and membranes, leaving it there, and re-introducing it if it were expelled.

Such were the general principles of practice inculcated by Professor Hamilton, in accordance with which I was guided in conducting the cases that came under my charge, and which I have to a great extent followed ever since, modified, however, to

some degree by longer experience and the necessities of particular cases. In addition to the means recommended by Dr Hamilton, I have had recourse occasionally to sponge or tangle tents, things then unknown, and a very few times to a small Barnes' bag as at first introduced,—not such an one as I saw for the first time within the last few weeks, and which quite horrified me. Another point in which I differed considerably from Dr Hamilton's practice was in not interfering so soon as he did, further than dilating the os and separating the membranes. I am satisfied that by so doing I have saved the lives of many infants. For instance, in turning before the soft parts were sufficiently prepared, I am sure I lost some children from the compression of the cord between the os and cervix of the mother and head of the child. In the hurrying on of the labour I am satisfied that the greatest risk lies of not having a living child.

It is only since I began to write this paper that I had any idea of the practice now generally recommended and adopted, of forcing on the labour and converting the whole into a regular operation, to be carried on continuously from its commencement to its termination. I very much fear that, if the result desired be the birth of a living child, it will, under such treatment, oftener than otherwise end in disappointment. For many years the means I have employed have been very simple and of a less heroic nature, but the results have been on the whole very satisfactory.

From the annexed table it will be seen that premature labour was induced in twenty-six individuals who gave birth to seventy-two children, fifty-nine of whom, save one, who only lived some hours through too early induction, were healthy, and as likely to live as any born at the ordinary time; thirteen were still-born, a

Number of times of Induced Labour.	Number of Patients.	Number of Children.	Living and Healthy.	Still-born or lived only a few Hours.
Once, . . .	8	8	7	1
Twice, . . .	3	6	4	2
Thrice, . . .	10	31 [1]	30	1
Four times, . .	1	4	3	1
Five times, . .	3	15	8	7
Eight times, . .	1	8	7	1
	26	72	59	13

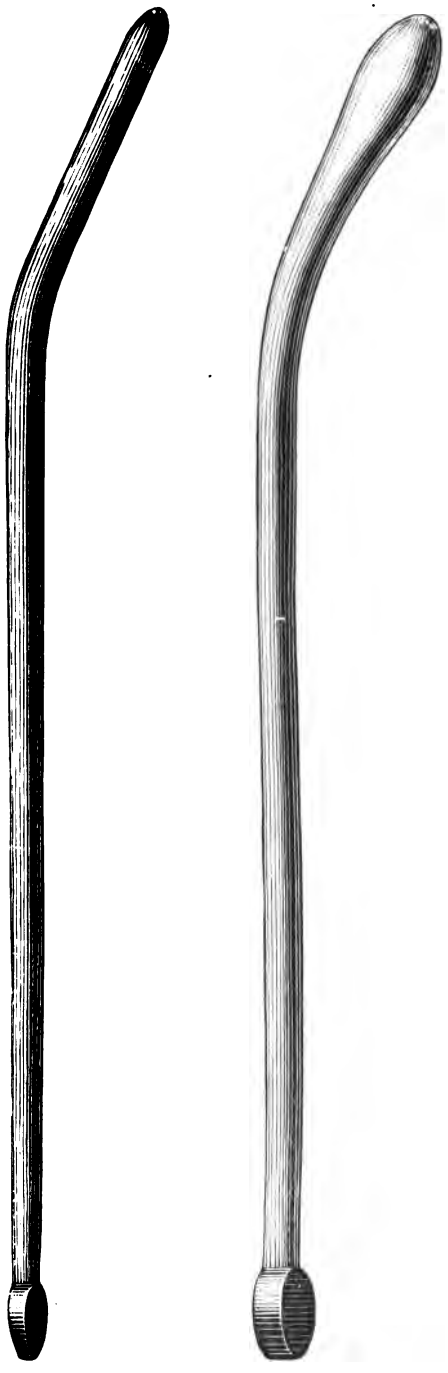
[1] Twins.

large proportion no doubt out of seventy-two in ordinary circumstances, but not so when it is remembered that the mothers of seven of them had been subjects to embryotomy, while those of the others had been severe long forceps cases. It has to be borne

in mind, further, that the infants would all have been born dead at great risk to the mothers. It may also be noticed that most of these cases were breech or footling, in which case the unfavourable result, in some at least of the cases of turning, would be due to the version having been had recourse to too soon before the os and cervix were sufficiently dilatable. After 1843 I had the satisfaction of having all the children born alive (except in the case of No. 17), though in some tedious and lingering cases I did have recourse to turning, but never until I was satisfied that I could pass the head through the os in one or at most two pains. In such cases turning is, I think, quite justifiable, but not otherwise. It was, however, a satisfaction even in these unsuccessful cases to be able to present an unmutilated infant to the suffering mother.

As to maternal deaths, I was perhaps too proud of my good fortune in this matter, having never experienced any such loss. Indeed, for several years I had lost neither mother nor child. Strange that in my last two cases the mothers both died from blood-poisoning, how generated I could not say, but the cause of much grief and distress to myself.

Method of Procedure.—The first thing to be done in every case is to fix the date of the intended operation. To this end the date of the last catamenia is noted, and ten days are added. Four months later, quickening generally occurs. To this we add three months, and consider that the fœtus has reached seven months complete, before which time it is needless to induce labour with hope of having a viable child. The time allowed to elapse between this and the operation must depend on the degree of deformity. If very great, no time should be lost. In other cases it may not be necessary to interfere so soon, even a month later may be soon enough. I generally commenced operations a week before the time I wished the birth to take place. I also arranged *in every case* that there should be a wet nurse, or friend, ready to give the child breast milk from the time of birth. This was needful generally for only two or three days, after which the mother was able to undertake the duty. The first step in the operation is to open the os uteri. In a few cases the pelvis is very shallow, and also wide at the outlet. In these the os is easily reached, and may be opened up by the finger. In most the os can only be touched by the point of the finger, and in these it is necessary to insert some instrument to open it up and bring it down. At first I used for this purpose a large-sized steel bougie, but finding the curve inconveniently great, I had it straightened out with about 2 inches at the end bent a little so as to form a very obtuse angle. This I used for some time, but falling in afterwards with a steel rectum bougie I have used it ever since. It is thicker at the point than the other, and so opens the os to a greater extent. It is also blunter, and thus less apt to rupture the



membranes. This instrument is passed up through the os into the cervix, and gently turned round. This is done daily, two fingers of the left hand directing and guiding it, while the right hand is manipulating it and carefully separating the membranes around the os. In the course of three or four days, but sometimes not until six or seven, the condition not only of the os and cervix, but also of the vagina, becomes entirely changed so as to be soft, relaxed, and dilatable, very much as at the full time. So soon as this occurred and I could easily reach the os and cervix with the fingers, at first with one, and as soon as I could with two, I proceeded to the more complete dilatation of the os and cervix and separation of the membranes. This procedure was repeated daily, occasionally, but very seldom, morning and evening; at times only every second day, in every case occupying a very few minutes. The labour pains do not come on uniformly. Sometimes they are continuous from their commencement; at others they are very slight and at long intervals. But no interference is required so long as there is no undue pressure on the child, or until the os and cervix are quite soft and dilatable, when means may be used to bring the case to a termination.

I regret that, from the loss of many of my old note-books, I cannot give fuller details of the cases adduced in this paper, to support the practice recommended in it, but they are, I think, sufficient. In addition to my own cases I may refer to those mentioned in his class by Prof. Hamilton as illustrating the same principles of treatment, and also to some in whom my father induced labour and whom I attended after labour had begun. Amongst the latter there was a poor woman in Ponton Street who had been the subject of embryotomy, and whom I attended on three different occasions, on all of which the children were born living and healthy; and similarly in a Grassmarket case where there were also three living children. There may have been less fortunate cases, but if so I have forgotten them. There is, however, one case in my own early practice which I have never forgotten, and which, I believe, modified my practice afterwards. The name and date I have searched for in vain. The lady had married rather late in life, and succession to a good property depended on her having a son. Her first child, born in the country, was still-born, the result of some disproportion rendering premature labour necessary as the only remedy in future pregnancies. She came under my care, and I suppose I proceeded as usual. In due course labour came on, and, so far as I can remember, went on favourably for a time. Then some arrest occurred, and whether from mere impatience to see the desired result, or from believing that, if I had the purchase of the body, I could more easily overcome the obstruction, I do not remember, but I turned the infant and did thereby get it past the osseous obstruction. I had not, however, sufficiently reckoned on difficulty

connected with the os and cervix, the tightness of which was not overcome until the circulation through the navel string had been stopped, and the child was still-born. She was not again pregnant, so far as I know, and I need say nothing as to the disappointment to all parties. Since then I believe that I have never turned for mere hastening of labour, unless I was satisfied as to the proper condition of the os and cervix.

Short Notes of our Cases.

Case 1.—Mrs S. had lost previous child from disproportion; was visited on the 18th and 19th March 1833; began dilating os on the 20th; repeated dilatation on 22nd and 24th. On 25th punctured the membranes as previously described, and repeated dilatation with finger on 26th and 28th. On later date slight pains began; on the 30th was safely delivered of a living child.

Case 2.—Mrs W. Second pregnancy; lost previous child. Began dilating os on 21st July 1833; repeated dilatation on 22nd and 23rd. On 24th punctured membranes; pains slowly supervened. On 26th was safely delivered of a living child. On 26th May 1835 had a miscarriage.

On 4th February 1837 began dilating. On 11th punctured membranes; shoulder presented; turned; child still-born on 17th, 8 lbs.; probably too late in inducing labour.

Case 3.—Mrs S. No previous history. Commenced dilating os on 19th May 1834; repeated dilatation on 22nd, 23rd, and 24th. On 25th punctured the membranes; dilated os daily until the 29th, when the labour terminated favourably.

Case 4.—Mrs S. Know nothing of previous history; must have had two children previously.

Dilated the os as usual on 24th, 25th, and 26th May 1835. On 27th breech presented, or was brought down; child living.

From 7th to 11th July 1838 dilated; pains insufficient; long forceps used; boy still-born; fourth child.

Dilated os on 29th and 31st October 1840; pains came on gradually; delivered by forceps on 4th November; child living; fifth child.

Case 5.—Mrs. P. An out-patient of Maternity Hospital; had been the subject of embryotomy.

In November 1841 dilated with bougie from the 4th to the 8th, then with the finger; child, a male, born on 11th; breech; still-born.

On 30th January 1843 commenced dilating. On 9th February membranes gave way and liquor amnii discharged; living child born on 11th.

On 5th July 1844 commenced dilating. On 13th delivered of a son, still-born.

On 14th July 1846 commenced dilating; delivered on 21st; breech case; male; still-born.

On 29th August 1848 commenced dilating. On 1st September membranes gave way at 10 P.M.; arm and breast presented; turned and delivered with great difficulty; still-born; eighth month; tenth pregnancy; must have been five times pregnant and subject of embryotomy before I saw her.

CASE 6.—Mrs B. On 16th June 1841 was delivered of a son, still-born, after a very tedious and lingering labour at full time; fifth pregnancy.

On 7th, 9th, 11th, 12th, 16th, 17th, and 18th September 1842, separated the membranes with finger. On 20th liquor amnii escaped and pains came on; very trifling all the 21st; about 9 P.M. regular; os was soon dilated; head advanced a little, but was detained at brim; applied forceps, and with one effort the head was brought down and the child was born alive; a boy, 5½ lbs; measured 18 inches; sixth pregnancy; the first child born alive.

CASE 7.—Mrs. T. No previous history.

Separated membranes on the 7th and 9th April 1843; next day, the 10th, the liquor amnii escaped and labour progressed very slowly; child, a girl, 8 lbs., born on the 14th; still-born; had been dead some days.

On 10th June 1845 separated membranes with finger. On 11th, 13th, 14th, 16th, 17th, dilated as usual; introduced a tent on 20th and 21st; gave ergot; dilated on 22nd; child, a girl, 6 lbs., and 16½ inches, born alive on 27th.

CASE 8.—Mrs L. Previous history: On 16th April 1845 delivered of her first child; deficient brim; delivered with long forceps; still-born.

On 25th July 1847 was again delivered of a still-born child with long forceps; premature labour induced thrice subsequently, a living child (girl) being born on each occasion. I cannot lay my hands on the notes of these cases, but since writing this paper a near relation of the family informed me they were all grown women, and one, mother of a family.

CASE 9.—Mrs L. Previous history: Third pregnancy; at full time; labour commenced on 30th August 1842 at 9 P.M.; saw her at 9 A.M. On 31st pains strong until 4 P.M., when there having been no advance of head since mid-day, applied the forceps; there being still no advance, the head was perforated at 5 P.M.; child, a girl. On 28th September 1843 commenced dilating os uteri; noted in my book that it was too late. On 5th October 'waters' broke; pains began on 9th; shoulder presented; turned; had

great difficulty in getting head through the brim; child still-born; antero-posterior diameter estimated at 3 inches.

CASE 10.—Mrs S. Previous history: Was delivered at full time of a son, first pregnancy, 13th October 1846; still-born; pelvis very deep; antero-posterior of brim very narrow, from the promontory of the sacrum projecting.

On 26th and 27th October 1847, dilated the os uteri; pains came on during the night, and she was delivered with long forceps on the 28th of a girl; child still-born.

Dilated os with bougie and finger on 8th, 9th, 10th, and 12th November 1848. On 13th 'waters' broke; pains came on, and she was delivered of a living girl on 14th.

On 17th October 1850 commenced dilating; os not dilating much, a sponge tent was introduced on the 25th, and another on the 26th. On 27th 'waters' broke and pains began; on 28th had living son.

The fifth and last pregnancy occurred in 1856. . . . On 26th and on 28th November dilated the os. On 30th introduced a sponge tent, and went on dilating with finger; pains supervened on 8th December, and on 9th she was delivered of a living boy.

CASE 11.—Mrs W. Previous history: March 1850; labour commenced by separation of the placenta; outlet found to be narrowed by undue approximation of rami of pubes, and tuberosities of ischii; forceps required, and child, a girl, still-born.

On 8th and 9th September 1851 separated membranes in usual way; labour supervened, and on the 10th had a living girl.

Same treatment for three days previous to 26th October 1853; living girl.

Commenced dilating on 3rd March 1857; repeated dilatation on 5th, 7th, and 9th, when labour pains supervened, and a living girl was born on 10th.

CASE 12.—Mrs B. Previous history: On 13th September 1854, was requested by a medical friend to see his wife in labour of her fourth child. She had had very severe labours when abroad. There was great deficiency at the brim; long forceps were required; a very severe case, but child living.

April 1856.—Last catamenia 8th August; Q.[1] end December; full time to end May—about 30th April. On 26th, 28th, and 29th, dilated as usual; pains came on, and she had a living son and easy labour on the 30th.

Same treatment; another living son and easy labour on 13th November 1859.

CASE 13.—Mrs B. On 1st April 1855 was delivered of her first child, a boy, who was born alive. The labour was a very

[1] Q = Quickening.

severe one, the promontory of the sacrum narrowing the brim; long forceps were necessary, and much force was required before the head was brought down. This child grew up idiotic and epileptic, and died at about twenty. Between 1855 and 1864 she had five children, all born alive, but after very severe labours.

In 1872 she was persuaded to allow labour to be brought on. On 15th November commenced opening os with finger; on 17th, 18th, 19th, and 20th, bougie and finger used, but little dilatation resulted; on 22nd introduced sponge-tent; on 24th another; on 25th very slight pains, and some liquor amnii discharged slowly; on 26th pains during night; removed sponge-tent at 10 A.M., when the os was scarcely the size of a crown-piece, but gradually opening. About 12.30 P.M. a clot of blood was discharged, and a little fresh blood came with every pain. I resolved to turn, got hold of a foot, and the child was born alive soon after 1 P.M. The os and cervix in this case were very unyielding. The difficulty of getting through the brim was very slight, owing to the smaller size of the head, and the labour was much more easy than on previous occasions.

CASE 14.—Mrs C. On 31st May 1856 it was necessary to perform the operation of embryotomy on her first child. The promontory of the sacrum narrowed the brim, and the outlet was also deficient from ossification between the sacrum and coccyx, the latter of which was quite bent up.

Last catamenia 9th February; Q. 12th January; full time 12th November. On 10th October 1857 began opening os, and so daily. On the 18th pains came on; child, a boy, was born alive, and finding there was another, I turned, and he also was born alive. Both children sucked well and seemed to thrive, but on the 21st one died, eight days old, apparently from irritation of the bowels and on the 26th the other died from intussusception, a day ill.

Last catamenia, end April; Q. 3rd September; induce beginning January. On 3rd January 1859 I commenced dilating, and on the 10th, as the os and cervix were quite relaxed, and as there was some delay at the brim, I turned, bringing down the feet; child, a fine girl, born alive; died fourteen days old from intussusception; ill three days; post-mortem made.

Last catamenia 23rd January; Q. 29th May; eight months 29th September. On 29th September 1862 commenced dilating os, and continued until 6th October, when male child was born alive; still living.

No more children.

CASE 15.—Mrs S. On 2nd May 1854, after a very severe labour, was delivered of a son, still-born, with long forceps.

Last catamenia end August; Q. beginning January; full time beginning June; induce 8th May. On 28th and 30th of April, and four first days of May 1857, dilated os; very slight pains at

irregular times for next three days. On the 8th had a living child, a girl.

CASE 16.—Mrs S. Was confined rather prematurely on 22nd March 1859 of a small child, a girl; required, however, the use of forceps for delivery.

On 20th December 1860 was delivered of a son, 9 lbs., still-born, with long forceps; narrow brim and outlet, and great difficulty of delivery.

On 7th, 8th, 10th, 11th, 12th, and 13th October 1861 dilated; pains regular, but the placenta presented; turned, and delivered of a boy; quite healthy.

CASE 17.—Mrs G. M. On the 23rd May 1861 very severe labour; brim very deficient from projection of promontory of sacrum. The child was turned, but the head had to be opened to allow of its birth.

On 22nd, 24th, 25th, and 27th March, and daily until 3rd April 1863, os dilated. After full dilatation, turned on 4th, and child born after a severe struggle. Artificial respiration was kept up for five hours, when the child died.

Last catamenia 21st June; Q. 17th October; seven months 17th January. On 31st January 1864, again had a still-born child; commenced dilating daily on 24th December. On 30th introduced a sponge tent, which was expelled during the night. On 31st pains gradually increased; membranes entire until 10 P.M. Head had been felt at os during the week, but now breech and an arm presented. The body was found doubled on itself, the arms and legs being huddled together. A foot was brought down, and after great difficulty the child was born. The navel string had been brought down, but was pulseless. Heart was beating slightly; artificial respiration kept up for an hour, but child died.

In 1865, the last catamenia having been at the beginning of August, I commenced dilating on 9th February, and repeated the dilatation on the 10th and 11th, when slight pains came on, and increased during the night and most of the 12th; membranes entire; os size of crown piece at 7 P.M., and at 10 P.M. nearly dilated; ruptured membranes, and in three pains the head passed through the brim, and was soon born; child very weak, but cried; sucked that evening and next day, but on 13th suddenly collapsed; a week later and probably the child would have lived.

Commenced dilating on 1st April 1867, and repeated dilatation daily. Liquor amnii escaped on 7th. On morning of 10th introduced elastic bag to open uterus; pains came, and delivery was effected in evening; breech case, still-born. Meconium had been passing for two days, and there was no pulsation in the cord when it was reached. Child had been dead probably two days.

Commenced dilating on 4th January 1869. On the 5th introduced a sponge tent; on 6th 'waters' discharged; on evening of

7th pains came on, and early on the 8th a healthy boy was born, though the head had evidently been much compressed.

CASE 18.—Mrs M. On 1st February 1862 I assisted a friend in a difficult labour; child still-born on account of deficient pelvic space.

Last catamenia beginning May; Q. middle September; eight months middle May. Dilated os on 10th, 11th, and 12th January 1863; pains natural, and delivered of a living child on 4th.

Commenced dilating on 25th April 1865; pains supervened, and on 4th May a living child was born.

Commenced dilating on 6th December 1867; child born on the 14th; lived only ten hours.

CASE 19.—Unknown. In 1860 I was called to assist where the woman had been in labour four days. Embryotomy was performed.

In February 1863 labour was induced as usual. There was some difficulty. I turned, and a living child was born

CASE 20.—Mrs M. Previous history unknown.

On 3rd September 1863 commenced dilating os and continued until 8th. On 9th liquor amnii escaped; slight pains in evening; became regular on morning of 10th; delivered safely at 9 P.M.

On 3rd December 1864 commenced dilating the os, and continued daily until the 10th, on the evening of which liquor amnii escaped; patient was uneasy, but had no pains until the 14th, when she was safely delivered of a living child.

On 5th January 1869 commenced by introducing sponge tent; from 6th to 10th dilated with finger; safely and easily delivered.

CASE 21.—Mrs G. On 30th August 1865 was delivered after tedious labour with long forceps; child still-born.

On 9th September 1867 commenced dilating with finger, and continued until the 12th, when slight pains came on. On the 13th, the os and cervix being quite dilatable and pains slight, I turned, and a living child (girl) was born.

On the 28th April 1869, pregnancy being supposed to be seven months and ten days, commenced dilating and continued daily until 3rd May, when pains came on about 5 P.M., not severe; at 10 P.M. continued dilating until os was quite open; turned; living child.

On 29th May 1871 commenced dilating. On the 1st June slight pains supervened, gently dilating the os; sent for early on the 3rd; os nearly dilated; soon ruptured membranes; face presented. By counter-pressure made occiput present; head soon cleared the difficulty at the brim, and a boy, at about eighth month, was born.

CASE 22.—Mrs G. In labour from a Sunday until Thursday,

when I was called in; cross birth; turned, and with great difficulty completed delivery, 5th October 1865; still-born.

11th December 1866. Came to my house daily for ten days, when the os was dilated; labour supervened at about 7½ months and went on satisfactorily, being attended by her own medical attendant.

Came in the morning daily to my house, when I dilated as usual; she was above four hours under chloroform, the child being large, but, after a severe labour, was safely delivered on the 19th December 1867. Had a miscarriage between third and fourth months.

Last catamenia beginning April; Q. middle August; seven months, beginning November. Came as usual from the 18th to the 20th November 1869; child small; labour easy; skin bound, and lived only four days.

Attended me for a week daily; labour not coming on, I inserted an air ball, which, I think, pushed up the head and a shoulder presented; very severe labour; head born with great difficulty, and child still-born on 19th December 1870; thought I had delayed too long in inducing labour.

Commenced dilating on first week of eighth month; visited me daily from 2nd to 12th January 1872; on evening of 12th introduced elastic bougie; next morning the liquor amnii escaped; on evening of 13th the os internum very rigid and not larger than a half-crown piece; kept dilating it with finger from midnight until five o'clock in the morning, when head descended on the os, which soon dilated; four pains brought head through the brim and two more finished delivery; child alive.

Dilated from 4th to 12th August 1873, when I introduced a bougie; os dilated very little; on 13th pains more regular; liquor amnii discharged on the 14th at 7 A.M.; pains slow; at 7 P.M. began dilating upper os, which was dilated at 8.30 P.M.; head progressed as far as tuber ischii, where it remained for some time; applied forceps; born at 9.30 P.M.; healthy boy.

Dilated with sound and finger 17th, 18th, and 19th August 1875. On forenoon of 19th liquor amnii escaped; os and cervix fairly soft; pains slight. On 20th pains severe from 7 A.M. to 10 A.M.; os about size of crown piece, and head cleared it at 12.30 P.M.; pains very severe for an hour, when the head cleared the difficulty and two pains finished delivery; boy, 5½ lbs.

Dilated from 2nd to 10th October 1877, when very slight occasional pains came on. On 14th slight escape of liquor amnii; pains not much increased, but pretty constant all night between 15th and 16th; born at 11 A.M., 16th October; boy, 5½ lbs.

CASE 23.—Mrs D., on 15th January 1870 was delivered of a daughter, after a very severe labour, with the forceps; brim

narrow, as also the outlet, the tuber ischii being too close; child still-born.

From 12th May 1872 dilated os daily for a week; then every second day until the 20th, and then daily. On evening of 26th introduced indiarubber ball, and some pains came on. The os gradually dilated; head remained long at the brim; soon passed through the cavity, but detained near the outlet; after an hour's pains passed the difficulty with a sudden jerk; delivery soon completed; 27th May; son, 6 lbs.

Commenced dilating on 2nd August 1873; continued on 3rd, 4th, and 5th, when slight pains came on, and the os kept dilating slowly all night until 10 A.M. of the 6th, when all the passages being dilated, I turned, and delivered the child in a few minutes; a boy, 6½ lbs.

Last catamenia 17th to 21st March; Q. beginning August; induce 10th December. Commenced dilating, or rather bringing down the os with the bougie, on 2nd December 1874; dilated with finger on 7th, 8th, 9th, and 10th; slight pains on the 11th; kept dilating the os from 11.45 A.M.; pains severe while head passed through the pelvis; born at 1.45 P.M.; boy, 6¾ lbs.

Last catamenia 28th November; Q. end March; induce end July. In July 1876 brought down os with bougie; dilated with finger on 23rd, 24th, 25th, and 26th, when pains came on, and parts being dilated, I turned; girl, born on 28th.

These four children all living now, and healthy.

CASE 24.—Mrs H. In labour of first child 15th January 1873. Promontory of sacrum projecting; head detained at brim; turned; great difficulty in being brought through; still-born, but artificial respiration kept up for 2½ hours, when child recovered; when about five hours old, gave a scream, and died.

Last catamenia 25th April; Q. 25th August; eight months, 3rd January. On 7th January 1874 commenced dilating os; labour soon came on, and child born on 11th without much difficulty. Fine healthy child; died, diphtheria, two years old.

Last catamenia 15th January; Q. 12th May; induce end September or beginning October. Commenced dilating os, which was very difficult to reach, on 27th September 1875; on 30th soft and dilating; very slight occasional pains until 4th October; between 4th and 5th slight discharge of liquor amnii; pains slow and weak until evening of 6th, when they were very severe for four hours; at the end of that time a few very strong pains forced the child through the cavity of the pelvis, and girl, 6½ lbs., was born at 3.30 A.M. of 7th; sacrum very flat.

Commenced dilating os on 25th January 1882, and daily until 31st. During the night of 1st February the liquor amnii escaped and drained off slowly for two days; very strong pains for five

hours, when the head cleared the brim, and in twenty minutes the child was born; boy, 6½ lbs.

CASE 25.—Hon. Mrs E. On 11th May 1872 was, after a very severe labour, delivered of her first child, a boy, still-born. In this case the rami of the pubes formed, instead of the natural arch, an acute angle, and the tubera ischii were consequently so close that the head of the child had to be brought out behind them. The outlet, therefore, was exceedingly small. In addition, the coccyx was abnormally curved forwards and ossified to the sacrum. The head came readily into the pelvis until arrested at outlet. Forceps were applied and great force was exerted in the extraction, not, of course, in the usual direction. Suddenly the coccyx broke across, and, at the same moment, the head was born, completely lacerating the perineum—the only case of this accident that ever occurred to me in my long practice. The consequences of perineal laceration were not so easily remedied in these days as now, and the dread of it was so instilled into his pupils by Dr Hamilton that I have often sat for hours supporting the perineum, even when using the forceps, with the happy consequence that I never had another case similar to this; the only one I can remember being one where a couple of stitches were considered advisable and necessary, and were quite successful. In this case the operation for its restoration was only partially successful.

Last catamenia early March, reckon from condition about 26th; Q. 20th July; induce 15th to 20th November. Commenced on 17th November 1874, opening os with finger and bougie, and continued daily until the 24th, when pains began. Liquor amnii discharged spontaneously; considerable difficulty at the outlet, the head being forced backwards through want of pubic arch. Notwithstanding the utmost care the restored perineum was much torn; child a little above 6 lbs.

Last catamenia 1st August; Q. 26th December; induce 7th or 8th April. Os easily reached with finger; dilated gradually from 9th to 16th April 1876; pains regular on afternoon of 16th, and child, a girl, born in the evening without much difficulty; perineum as before.

Dilated os daily with finger from 23rd to 29th March 1878, when liquor amnii escaped; slight pains on 31st until 8 P.M.; delivered at 11 P.M.; daughter, 6½ lbs.

Last catamenia 15th November; Q. 15th March; induce 15th July. Dilated os with finger from 10th to 19th July 1880; early on 20th liquor amnii discharged without pains. I used one of Barnes' bags on evening of 21st. The os was opened by it, but the head had been pushed aside. I turned with some difficulty; placenta adherent and required removal; born on 22nd; son, 5¾ lbs.

Dilated os as usual daily from 9th to 21st February 1884, when

she was safely delivered of a son, 6 lbs. Soon after delivery she became restless, sleepless, and delirious, with great tympanites; died on 23rd. In the act of dying an enormous discharge took place from the bowels, so terribly and overpoweringly fœtid that the nurse and all present had to fly from the room for a time.

CASE 26.—Mrs G. was confined of her first child on 15th August 1873; a boy, still-born. The labour was very tedious and painful; promontory of sacrum narrowed the brim; delivery with long forceps.

Os not easily reached; dilated with bougie on 15th, 16th, and 17th August 1874, with finger on 18th, 19th, and 20th. On evening of 20th liquor amnii escaped; on 21st no pains; on 22nd, at 3 A.M., pains; at 6 A.M. found head high and not down on os; dilated os until 9 A.M., when the head passed it and came down on the narrow brim, where, with strong pains going on, it remained for an hour; soon after 10 A.M. it passed through; at 10.45 A.M. applied forceps and delivered at 11 A.M.; child 6 lbs.; both well.

Last catamenia 7th to 12th July; Q. 18th November; induce middle March. On 6th, 7th, and 8th March 1876 dilated os with bougie. After the third day could reach it with the finger, with which I dilated until the 13th. The parts became soft and relaxed on the 11th; slight occasional pains on the 11th and 12th; during afternoon and evening of 13th became more regular and steady, especially towards midnight. About 3 A.M. of 14th the os was about half dilated, and about 4 A.M. it slipped back over the head, which came down with less difficulty than last time, but was detained at the outlet for several pains; born at 5.30 A.M.; boy, 5¾ lbs.

The os and cervix were treated as usual from the 6th to 14th September 1878; child, a girl, born on 15th; all well.

Dilated with finger on 6th, 7th, 8th, and 9th October 1880; pains came on at 5 P.M. of 10th; liquor amnii discharged at 11 P.M.; at 1 A.M. of 11th pains very severe; girl, born at 7 A.M.; placenta adherent; child well formed and healthy, save that there was a large patch of erysipelas on the head. It was soon seized with convulsions, and died in the evening. The mother sank next day.

Though I have had no more cases under my own immediate charge, I cannot refrain from giving the history of one with which I had somewhat to do, and which, I think, illustrates well the result, in the same individual, of the two very different modes of procedure employed in these unfortunate cases.

In 1893 I was consulted by a lady about the case of a charwoman, Mrs Ferguson, who had lost two children after two very serious labours.

On her visiting me I found she was pregnant six months of her

third child, and that the promontory of the sacrum encroached inordinately on and diminished the brim of the pelvis. It was arranged that she should enter the Maternity Hospital and have labour induced at the seventh month—which she did. I then explained to the house-surgeons my mode of treatment, and there and then commenced by introducing my bougie and dilating the os, directing that this should be repeated next day.

The second day after, when I called, I found that the previous day an elastic bougie had been introduced between the wall of the uterus and the membranes, but had been expelled during the night. I then requested that the treatment should continue to be such as described in this paper, and I called in almost daily to see how matters progressed and to give needful directions. Matters did not go on speedily, and the young doctors no doubt thought that some more active treatment was desirable. I, however, encouraged them to have patience, which I assured them would be rewarded in due course.

Not much change took place for a week at least, but the passages were becoming softer, and the os was descending into the cavity of the pelvis. As far as I can remember, about the tenth day very slight pains came on, and the membranes began to descend.

This went on gradually and more distinctly for a day or two, when in the afternoon of the 1st of August (1893) the pains became more severe. The house-surgeon was called, and in about an hour the patient was safely delivered of a son, who continued to do well.

After commencing this paper I wished to know more of this patient, and whether she had had any more children. I learned that she had been again a patient at the Maternity, but that the child was still-born. On ascertaining her address I called for her, and saw both her and a fine healthy boy of four years. She told me that in March 1895, being then seven months pregnant, she went again to the Maternity, and that something had been done to her the first day; that on the next she had been almost constantly under chloroform, that she had a still-born child in the evening, and that ever since she had been suffering from prolapse of the uterus, which very greatly interfered with her means of gaining a livelihood. Having now the dates of her two confinements, I consulted the Maternity books for further particulars. As to the first there was no entry save that of the birth, a natural case, on 1st August 1893. The house-surgeon in attendance had just entered that day on his duties, and not knowing the previous history of the case, entered it simply as a natural labour. I suppose that the means employed were so simple, and with so little of instrumental interference, that the previous house-surgeons did not consider them worth recording. Ascertaining that one of these house-surgeons was still in this country, I submitted to him what I have stated above, and he confirmed my

statement as in conformity with his recollections of the case so long as he was present, for he had to leave the hospital a few days before the end of July.

As to the second confinement, it is recorded in the Maternity books that an elastic bougie was passed into the uterus on March 18th, at 6 P.M., the day of admission. On the 19th, at 11 A.M., it was found in the vagina and reintroduced; soon after the liquor amnii escaped. It was then thought necessary to dilate the cervix, which was done by introducing Ribes' elastic bladder at 2 P.M. and distending it with warm water. This was removed at 5.40 P.M., and the vagina carefully douched. The pains were weak, and a Barnes' bag was introduced, which dilated the cervix. Pains being weak and there being some hæmorrhage, version was had recourse to, and the feet were brought down. The body and arms were readily delivered, but the head was detained at the cervix and brought through with great difficulty. Strong traction of the body and firm pressure on the head above the pelvis completed the delivery at 6.20 P.M.; child still-born, but was resuscitated by artificial respiration. It was then placed in an incubator, but died in four hours.

It is always unsafe and invidious, as well as unwise, to dogmatise as to what would have been the result of a different treatment in any particular case. Still I cannot refrain from expressing my confident belief that if this woman had been treated similarly as in her previous confinement, she would have had a living child, and would, besides, have been spared the distress and discomfort of constant prolapsus.

As to the general question, I believe that the practice taught by Professor Hamilton from the Edinburgh Chair, and perhaps a little improved by his pupil, the author of this paper, is, though possibly not so demonstrative, infinitely superior to that now generally recommended, being safer for both mother and child. If compelled to choose between the two, I rather think I would prefer to the present practice that recommended and practised by Dr Merriman and his contemporaries, viz., the simple rupture of the membranes, which I think would be as safe for the children, and at any rate not so dangerous to the mother.

In looking over my paper, after I had considered it quite finished, to see whether any points in the modes of treatment recommended might be made clearer, I began to realise that there were difficulties on which I had not previously counted, difficulties which some practitioners would really be unable to overcome. I allude specially to the use of the finger or fingers in dilating the os and cervix uteri. My hand is thin, the fingers are long and strong and very supple, and therefore capable of being manipulated and used in a way that others not possessing these material advantages cannot enjoy. It would be physically im-

possible for such to follow out certain steps of the practice recommended in this paper.

Before considering the means which I think might be substituted, I must repeat my solemn protest against the modern procedure of making the operation a rapid and continuous one.

The case of Mrs F. seems to me to afford a perfect illustration of the two systems, and of the undoubted advantages of the one over the other. Under the one she had a living child, with no extraordinary suffering, and a perfect recovery. Under the other, in addition to the risk attending the violent means used, the child was still-born, and she has been suffering ever since from prolapse of the uterus.

I should then propose, as the best means of preparing the passages and securing a safe delivery, first the passing up of the bougie through the os and cervix, and then the introduction of a tangle or sponge tent, to remain *in situ* for one or two days, to be reinserted if forced out, or a thicker one used if the os has become somewhat dilated. A second tent might be passed up along the first one, so as to increase the dilatation. The os and cervix might easily be dilated sufficiently to admit of two fingers, or of a small Barnes' bag capable of holding one or two ounces. Its presence there, with antiseptic appliances, for some days more would do no harm, and I am sure would bring on contraction of the uterus. I should be quite willing to undertake a case under such conditions, and would anticipate a favourable result.

Finally, on comparing the two systems, the conclusion I have arrived at is, that in the one case the soft parts are violently and unnaturally stretched, with consequent risk to the mother and with almost certain loss of the child should the lower extremities or breech present either naturally or artificially, and in any case considerable risk to it.

In the other, as proved by the foregoing cases, the soft parts become relaxed and prepared for the process of child-bearing as in natural labour, and present no obstacle to the birth of the child.

The President, Dr J. Halliday Croom, said it must be unique in the history of any Society to have its oldest member, and the oldest practitioner in the city, a man of 90 years of age, coming to honour them with an interesting and valuable paper such as they had just heard, a paper from which all could and should learn valuable lessons. He moved that Dr Moir's communication be considered as an address to the Society.

Prof. Simpson seconded this in a few words, and it was unanimously agreed to.

III. *Prof. Simpson* showed—(*a.*) CYSTIC DEGENERATION IN BOTH PAROVARIA, WITH DOUBLE FIMBRIATED EXTREMITIES IN BOTH FALLOPIAN TUBES. The following history of the patient has been drawn up by the non-resident clinical clerk ;—

M. D., æt. 22, nullipara, a farm servant; recommended by Dr Dobie of Coldstream on November 10th. She complained of pain on making water, and had had two attacks of retention of urine, the first eleven weeks ago. Her doctor drew off the water. Since then she has had increased frequency of micturition and dysuria. Previous to admission she was troubled with constipation, and when 13 had chorea.

Menstruation commenced at 16 years, and was always irregular and scanty, and at intervals she was amenorrhœic for one to three months. Early this year there was three months' amenorrhœa, but for six months before admission she was quite regular. There has been dysmenorrhœa for several years.

Physically patient is powerfully built and healthy-looking. The abdomen is not unusually prominent, and on palpation the body of the uterus is felt above the pelvic brim towards the right iliac fossa. On deep palpation, a fixed, firm, smooth mass is felt below the brim to the left side.

On vaginal examination the cavity is small, and a firm, smooth, cystic swelling is found bulging into the posterior and left lateral fornices. The cervix is nulliparous and small, and lies jammed forward near the symphysis pubis.

Bimanually the uterus, which is soft and elongated, is felt pushed upwards, forwards, and to the right by the tumour, which is non-sensitive and fills the greater part of the pelvic cavity. The right ovary is enlarged.

The appendages were removed from both sides on November 21st, and the patient is now feeling quite well, and in a few days will be leaving the ward.

(*b.*) SEVERAL UTERI REMOVED BY VAGINAL HYSTERECTOMY. In demonstrating some recent preparations illustrative of Vaginal Hysterectomy, Prof. Simpson said:—Dr Barbour has related, in the excellent paper which he contributed to the Society last year and published in the November number of the *Scottish Medical and Surgical Journal*, the scope of this operation and the technique of it as carried out by Dr Doyen. Within the last nineteen months I have operated according to Doyen's procedure in thirteen cases. The only fatal case occurred in a woman with a cancerous cervix, in whom there was a febrile condition indicated by an evening rise of temperature, which seemed at first relieved by the operation. For three days her condition seemed better than before the operation, but on the fourth day a septic peritonitis was set up, and terminated fatally on the evening of the fifth.

The indications for the removal in five instances was carcinoma of the cervix; in two, sarcoma; in three, fibromyoma; in two, disease of the adnexa; in one, a prolapsed uterus was the seat of a suspicious inflammation of the body and cervix.

The *first* preparation I show illustrates the result of the operation, where the uterus contained a fibroid tumour as large as a child's head. The notes of the case are drawn up by Mr Goldie, non-resident clinical clerk in the Buchanan Ward.

Mrs B., æt. 36; multipara. Recommended to the Ward by Dr Myles of Brechin. Has suffered from excessive menstrual discharge during the past three years, the bleeding recurring every two weeks and lasting nine days, and she has had pain in the pelvis for eighteen months, and in the left side and back, before menstruation, for the past three years, and lately has been troubled with increased frequency of micturition. She has had some leucorrhœal discharge for ten years, and since eighteen months ago there has been a feeling of weight in the pelvis and a pain in the thighs, with occasional numbness of the lower extremities. She has had two children, and her last labour, ten years ago, was easy, but the placenta was retained for eight days, and during the puerperium she was delirious for two weeks.

Physically, patient is pale and emaciated. The abdomen is not markedly prominent; the umbilicus is flattened. On palpation a hard, smooth, rounded mass is felt rising from the pelvis into the hypogastric and right iliac regions to within 2½ inches of the umbilicus. The greater part lies to the right of the middle line. On auscultation no bruit is heard.

On vaginal examination the cavity is elongated and the cervix lies far back in the hollow of the sacrum. It is smooth and soft and almost flush with the vaginal roof. The cavity of the pelvis is almost completely filled by the tumour, which is distinctly recognisable on bimanual examination as a solid uterine fibroid.

On November 21st, vaginal hysterectomy was performed. The operation was unusually prolonged, because of the necessity of breaking down and removing portions of the tumour before the bulk of the uterus was sufficiently reduced to allow of its being pulled down to the vulva. During the operation the patient was very collapsed; but she rallied immediately after, and is now feeling better than she had done during the past ten years.

The *second* preparation shows a uterus that was very easy of removal—the only difficulties that presented themselves being some slight perimetric adhesions and an infiltration of the right broad ligament with gelatinous and somewhat granulated tissue, which is probably of sarcomatous character. Mr Goldie's notes of this case are as follows:—

Mrs B., æt. 57, iv-para, was admitted to the Buchanan Ward on November 23rd, on the recommendation of Dr Robert Stirling of Perth.

She complained of a constant pain in the lower part of the back, which had lasted twenty years; also of long-standing leucorrhœa,

of sharp stabbing pain in the lower part of the abdomen to the left side of nine months' duration, and of a slight red discharge which commenced a few days before admission.

Patient reached the menopause seven years ago, and since then has had a red discharge on three occasions—once five years ago, again twelve months ago, and the last five days before admission.

Nine months ago she was confined to bed for six weeks with pain in the lower part of the back, and a few days before admission she was again compelled to remain in bed owing to weakness, and shortly afterwards some red discharge came from the vagina. This soon ceased, and was followed by a dull aching pain in the region of the left sacro-iliac joint.

On vaginal examination the cavity is found to be roomy and the crevix enlarged and irregularly nodular. A cluster of hard nodules is felt in the posterior lip, which are seen through the speculum to be of a pale yellowish colour and surrounded by a very much injected area of swollen mucosa. The crevix is drawn to the left side, and there is felt to be some resistance in the broad ligaments. The anterior and posterior vaginal walls are soft and lax. The body of the uterus is found on bimanual examination to be somewhat enlarged, firm, and not sensitive.

On November 30th the uterus was removed, and patient is now doing well. The uterus has numerous small soft tumours imbedded in the walls, one of which projects into the cavity like a sessile polypus, while one or two of smaller size project from the peritoneal surface.

The *third* preparation illustrates the applicability of the operation to cases of disease of the adnexa. It is from Mrs M., æt. 38, who was admitted to the Buchanan Ward on September 27th, complaining of pain in the left iliac and sacral regions, which commenced six weeks ago, when, after a heavy washing, she suddenly became sick and vomited, and immediately afterwards felt an excruciating pain at the bottom of the back. She fainted several times, and had rigors, cold sweat, and headache. A few days later diarrhœa set in and lasted more or less until she left the ward. The pain had been constant.

At last menstrual period there was severe dysmenorrhœa, with nausea, vomiting, and headache. She always suffered from dysmenorrhœa, and just before the present illness there was profuse leucorrhœa.

She has had six children and three abortions, the last being fourteen months ago. All the labours were tedious, and two were instrumental.

The patient is a short, spare, sickly-looking woman, and on vaginal examination the walls are found to be abnormally moist and warm, and through the left and posterior fornices there bulges a smooth, cystic, very sensitive mass. Bimanually the body of the

uterus is found to be enlarged and firm, displaced to the right side, and surrounded by adhesions. The right ovary is enlarged, and in the region of the left appendages there is an irregular, very sensitive, partly cystic mass which extends as high as the pelvic brim.

Vaginal hysterectomy was performed on October 16th, and patient left the ward in excellent health and spirits on November 13th.

Both ovaries are seen to be the seat of cystic degeneration, and have the enlarged, thick-walled Fallopian tubes bound together by peritonitic adhesions. The left, in the fresh condition, was three times the size of the right, and its largest cavity had to be tapped before it could be pulled down and allow of application of the clamp. It contained two ounces of pure pus, and the lining was deeply injected.

VAGINAL HYSTERECTOMY CASES.

1.	1896.	May.	M'K.	Carcinoma cervicis and parovarian cyst.	Cured.
2.	,,	,,	R.	Carcinoma cervicis.	,,
3.	,,	,,	M.	Salpingo ovaritis.	,,
4.	,,	July.	I.	*Sarcoma.	,,
5.	,,	,,	F	Fibroma uteri.	,,
6.	,,	Aug.	S.	Prolapsus uteri and metritis.	,,
7.	,,	Sept.	R.	Carcinoma cervicis.	Improved.
8.	1897.	Oct.	E.	Ovarian abscess--metritis.	Cured.
9.	,,	Nov.	B.	Fibroma uteri.	,,
10.	,,		A.	Carcinoma cervicis.	Died.
11.	,,		B.	*Sarcoma uteri.	Convalescent.
12.			D	Carcinoma cervicis.	Cured.
13.			L.	Fibroma uteri.	,,

13 cases with 1 death = 7 per cent. mortality.
* Not examined microscopically.
In Nos. 4 and 8 a recto-vaginal fistula has been present since operation.

7 cases of cancer of cervix.
3 of fibroids.
2 of salpingo-ovaritis.
1 of prolapsus uteri.
—
13

IV. *Dr R. Milne Murray* showed a FŒTUS WITH MENINGOCELE.

V. *Dr N. T. Brewis* showed—(*a.*) A UTERUS REMOVED BY VAGINAL HYSTERECTOMY for Malignant Disease of the Body; and (*b.*) a UTERUS WITH EARLY CARCINOMA OF CERVIX.

VI. *Dr J. W. Ballantyne* exhibited—(*a.*) A FŒTUS WITH EXOMPHALOS, a large SACRAL MENINGOCELE, and a double GENITAL

TUBERCLE. The specimen had been given him by Prof. Stephenson of Aberdeen. The interesting fact from a clinical point of view had been the presentation of the fœtus by the herniated abdominal contents (which included stomach, liver, spleen, and intestines). From the pathological point of view there was the presence of a genital tubercle in each groin along with absence of anus and other external genitals, indicating the originally double nature of the phallus. It was also noteworthy that there was no umbilical cord, vessels passing directly from the abdomen to the placenta and membranes.

(*b.*) A FŒTUS with a large ENCEPHALOCELE, which he had obtained through the kindness of Dr Langwill of Leith. The case had been one of hæmorrhage in labour. Bleeding had occurred in the early morning without pains; later, labour supervened, and the fœtus was born, the encephalocele presenting, and thereafter severe hæmorrhage occurred in the third stage. It was only then that Dr Langwill was called in, the case having been in the hands of a midwife. The mother had already had four children, all boys; the malformed fœtus was female.

(*c.*) A FŒTUS WITH ASCITES AND A DISTENDED BLADDER, for which he was indebted to Dr Edward Carmichael. The infant was born in July (1897), and the mother menstruated every month till May, when a week after the usual date she had a severe discharge; in July also, a few days before the confinement, she had a similar discharge. She was most surprised to find that she was seven months pregnant. On July 18, labour pains came on. A large bag of membranes presented, and when ruptured, dirty brown liquor amnii escaped. A hand and the head presented, and as Dr Carmichael had no forceps with him, he turned and found much difficulty in extracting the abdomen, much more so than the head. The placenta was firmly and widely adherent. There was no syphilis, but a distinct family tubercular history. Even on external examination it could be seen that the abdomen was larger than normal, and the presence of fluid could easily be made out. Frozen sections were made in the usual way, and it was found that both ascites and a distended urinary bladder were present. The drawings and photos exhibit the conditions found. The bladder contained more than 25 c.cms. of urine, sp. gr. 1003, reaction very faintly alkaline, colour a very pale straw. Ten c.cms. were precipitated with Bolland phosphor-wolframic acid mixture (to precipitate all nitrogenous bodies but urea). The filtrate gave effervescence with hypobromite. The nitrogen evolved corresponded to something less than 0·1 per cent. of urea. The urine also contained a small trace of coagulable proteids, and gave faintly the oxyhæmoglobin bands. The ascitic fluid measured more than 66 c.cms.; it had a sp. gr. of 1007, reaction alkaline, colour reddish-yellow (pale sherry). It contained albumen and globulin, and a distinct amount of oxyhæmoglobin. Its low specific gravity was

against the idea of its being of inflammatory origin. Dr Noël Paton was kind enough to carry out these analyses. The retention of urine was found to be associated with a membranous obstruction in the urethra, just at the root of the penis, and by a dilatation of the urethra behind that point. Fluid was also present in the tunica vaginalis testis, but not in the pleural or pericardial sacs.

(*d.*) A PLACENTA, with a supernumerary lobe projecting, covered by membrane, into the amniotic sac. This lobe, when cut into, showed a small hæmorrhage near its centre. The specimen had been sent to him by Dr Mona Geddes from the Plaistow Maternity Charity in London. It was the result of a twelfth pregnancy in a woman 36 years old, and it had been adherent, requiring forcible expression. Nearly the whole chorion had been retained.

(*e.*) A PLACENTA with a succenturiate lobe near to one margin, which one of his dispensary pupils had brought to him a few days since. The lobe was flattened and of about the size of a bean, and near it the placental margin was irregular. The fœtus had been dead for a week, and the labour took place without difficulty.

VII. *Dr W. F. Haultain* showed for *Dr W. Johnston* (Johannesburg)—(*a.*) Specimens from three cases of RUPTURED EXTRA-UTERINE PREGNANCY.

(1.) Mrs W., aged 38, had one child sixteen years before. Had no miscarriages and had enjoyed good health. A farmer's wife and daughter, she had lived a healthy life in the country. When called to see her she was living on a farm five miles out of Johannesburg. I found her in agonising pain, with incessant vomiting and diarrhœa, with tenesmus. There was a well-defined tumour in the right iliac fossa, corresponding to the size of a 3½ months' pregnancy. She had had an irregular discharge for about four months, but I could get no history of the passage of membranous tissue. They had never thought of pregnancy. She had suffered twice before from very acute pain, and had had a hypodermic injection of morphia, which relieved her. This was the third attack, and during the morning she had had an injection of morphia in the abdominal wall over the tumour, and told that the tumour, of which she was then conscious, *would dissolve.* Of the diagnosis there was no doubt, but to operate where she was was out of the question. I therefore advised her immediate removal to the hospital in Johannesburg. To relieve her immediate condition I gave a hypodermic injection of morphia and atropine. The risk of a five-mile drive was great, but I considered it greater to operate where she was. It was late at night before she arrived at the hospital, and as there appeared to be no excessive bleeding, I had her carefully treated during the night, and operated early in the morning. The abdomen was full of a sanguineous fluid. The tumour was easily separated from its adhesions and removed.

On its long axis it measured 6 inches. A small rupture had taken place near the base, but was covered inside by a clot, which allowed only limited oozing. On opening the sac no fœtus could be found, but covering one side was a beautiful radiation of the placenta. The patient made a rapid and uninterrupted recovery.

(2.) Mrs J., aged 30, had two children, but both were dead. It was six years since she had borne the last, which was delivered with forceps. She was very ill for a long time after this confinement, being unable to walk about for nearly a year. After this she was never quite well. The periods were very irregular, at times copious, at others scanty, and always with more or less pain. I saw her for the first time six weeks before the rupture, and suspected extra-uterine pregnancy. She had considerable pain at the brim, located in the right iliac fossa, and was bleeding slightly, which she thought was the ordinary period. She described what must have been decidual membrane as having passed with the discharge. She complained that during the month previous she had suffered frequently from severe neuralgic pains shooting across the stomach. On examining per vaginam, the right fornix was found filled up with a distinct small tumour, extremely tender to the touch. I watched her for a day or two, and told her that an operation might be necessary to put her right, explaining more fully to her husband the probable nature of the case. She improved, however, so much, that I thought I might be mistaken in my diagnosis, and being very busy, I am sorry to say I neglected to call. I explained to her friends that should severe pains or bleeding recur, they were to send for me. Six weeks after having seen her I was sent for again. She was visiting her sister, and while there she had begun to vomit severely, and to have great pain in the abdomen. I saw her at 4 P.M., and there was no doubt now of the diagnosis. She was bleeding slightly, and a doughy tumour could be felt filling up the pouch of Douglas and right fornix. The examination caused pain, and the whole abdomen was extremely tender and slightly tympanic. There was no doubt that a rupture, and a bad one, had taken place. I had her removed to the hospital at once, but unfortunately when she arrived there the operating theatre was engaged, and she had to wait until it was disengaged and cleaned up. Before she left for the hospital I gave a hypodermic injection of morphia, which had relieved her considerably. I may state here that I am much in favour of the judicious use of morphia in these cases, as it relieves the pain, does not increase the bleeding, and lessens most markedly the shock to the patient. When the patient was put on the operating table there was no perceptible pulse, the face and mucous surfaces perfectly blanched, and the pupils widely dilated. She was quite conscious, however, so it was necessary to administer chloroform. On opening the abdomen it was found full of blood, a large clot being lifted out, forming a complete cast of the right

side. I at once clamped the tube close to the uterus, and emptied the sac. As the patient was *in extremis* I had a saline solution injected into the veins as soon as she was under the influence of chloroform. She had in all 28 ounces. This I am quite sure saved her life. As time was of considerable object I stuffed the cavity with iodoform gauze and left the clamp forceps in position, as originally placed on opening the abdominal cavity. These I removed on the third day. The forceps used was plated, the plating of which was corroded and came off in black flakes, due, I presume, to the action of iodine in the gauze. A sinus remained until the ligature separated. I saw the patient again about three months after the operation, and she declared she had not been so well since the birth of her last child. You will observe that the fœtus was evidently undergoing degenerative changes, from its shrunken appearance.

(3.) Mrs L., mother of two children, the last five years old. Three years before this illness I attended the patient, who was suffering from endometritis, and then advised curetting, but through the illness of her child, and the financial reverses of her husband, the operation was not performed. For about two years after I had attended her for endometritis she had resided in London. About eleven o'clock at night I was called to see her, and found her suffering most acute pain and vomiting violently. On examining per vaginam a large doughy tumour could be felt filling up both fornices and the pouch of Douglas, but which caused no pain or inconvenience from the pressure of the examination. I gave a hypodermic injection of morphia and remained with her for an hour. As there was no evidence of active bleeding, and the patient fairly comfortable, I left her. In this I made a mistake. When I saw her in the morning the condition of affairs was too evident; she was in an exsanguine condition, the abdomen distended and tender, but there was not the extreme pain of the night previous. From the pulseless and exsanguine condition, however, it was evident there was no time to be lost in operating, and it was out of the question to think of moving her to the hospital. Being at a time when most of the medical men were out on their morning rounds, it was not until two in the afternoon that I was able to get assistance and begin the operation. The work of intravenous injection of a saline solution was begun simultaneously with the section, and altogether 36 ounces were injected. The abdomen was filled to distension with dark-coloured blood and clots. As it was impossible to tell from the vaginal examination or from the symptoms the side affected, I clamped both tubes close to the uterus to prevent as far as possible any further bleeding, while I emptied the abdominal cavity of the blood. I found the rupture close against the uterine wall on the left side, and that the clamp was only imperfectly checking the hæmorrhage.

As both tubes had been clamped and both ovaries somewhat enlarged, I considered it advisable to remove both. The sac against the uterus I cleared out and stuffed with iodoform gauze. When the patient was put to bed she had a perceptible pulse, and some colour of the lips and mucous surfaces, which were entirely absent when the operation was begun. All went well for the first three days. Urine was passed freely and voluntarily, and the bowels acted. The patient was unfortunately of a violently hysterical character, and she began to demand all manner of things from the nurse, and be altogether unreasonable. To make the nurse give her more food and stimulant she got up in bed on her knees and hands, and, as the nurse said, "danced in bed with rage." I gave her a quarter of a grain of morphia and 120th of a grain of atropin every night, but the poor nurse had a bad time of it as she would insist on having more morphia or champagne as she woke in the night. I had to get further nursing assistance for her, and I fear this was the fatal error, as the new nurse could not control the patient. She allowed the patient to get out of bed and get hold of an opened bottle of champagne, which was promptly consumed. The night following—a week after the operation—the nurse was determined a similar scene should not take place, and gave her two hypodermic injections of morphia in rapid succession. An hour after the second injection she died with unmistakable signs of morphia poisoning. In a busy practice it is impossible to withhold the use of morphia entirely from nurses, but I must say that, as a rule, its use is not abused by them. At the same time none of my trusted nurses were available. The sac was not a large one, and most of its contents were lost with the blood as it was removed from the abdomen. This case is instructive in showing that too much time should not be lost after the fact that a rupture had taken place and operating, and that too much trust should not be placed in unknown nurses.

(*b.*) CASE OF ABDOMINAL HYSTERECTOMY FOR FIBROIDS.—Miss N., aged 38, Natal. This lady had for some years been unable to walk, and suffered from great pain down both legs. She came to Johannesburg to a masseuse, and was being vigorously massaged when I was called in. I found both legs hard and œdematous, with great pain along the course of the veins, which were hard and swollen, with a temperature of 101° F. Examining the abdomen, there was no doubt as to the cause of pressure. A large hard multiple tumour could be felt in the middle line and to the right side. A bimanual examination revealed the fact that the uterus was incorporated. Neither the patient nor her friends were aware that there was any tumour in the abdomen, and were much surprised at the revelation. The patient, writing to me of her condition before the operation, says: 'No one will ever know the pain I used to suffer.' 'My legs were very hard when swollen and discoloured in places.' 'For a great many years my legs

have always been *so* tired.' 'I often went to bed with my legs so tired I could not sleep.' 'In bed when I turned over I used to have such a pain in the lower part of my back."

The inflammatory condition of the vessels was difficult to reduce. No sooner was one leg a little better than the other began, and the temperature ranged from 99°·4 to 100°·4, only occasionally touching normal. At last I decided to operate, to which proceeding neither patient nor friends objected, the patient agreeing that it would be better to die in the attempt to get well than go on suffering as she was doing, which she said she felt she could not do for long. I accordingly operated, first removing the ovaries and tubes, then transfixing the pedicle, and removed uterus and tumours as shown. The peritoneum I stitched to the pedicle, closing up the rest of the wound in the usual way. This patient had also an overdose of morphia given by a night nurse on her own responsibility, which, together with a troublesome bed-sore, which developed, retarded the convalescence. I will again quote the patient's own words:—'I walk to the village and back two or three times a week, which is altogether a mile there and back.' 'It does not hurt me to walk; when I walk up a slope then I begin to feel a little tired.'. . . 'I must tell you that every one who meets me says how well I am looking, and that my skin is much clearer than it has been for years.' . . . 'I am really feeling so well.' . . . 'I am looking so well, and I am quite stout.'

(*c.*) UTERI AND APPENDAGES OF BABOONS. — Here are three Baboons' uteri with their appendages, which I wish to show to the Society before having them cut up into microscopic sections. The female baboon has three distinct periods coming in regular cycles. She has the *menstrual period* corresponding in every detail to that of the human subject, with this exception, that the average period seems to last seven days. It is difficult to estimate the amount of blood lost, but I think it would not be less than two ounces. At times it is so profuse as to drop as the animal moves along. The first uterus is taken from the animal at this period, and immediately following this is the period which I have termed as that of æstrus or rest. As the blood disappears a slight mucous discharge takes its place, and the external genital parts gradually assume a turgid swollen appearance, until it reaches a great size, corresponding to that of a child's head, and giving the animal a disgusting appearance. It is during this period, and this alone, that the male is favoured. This period lasts about ten days. It is during this period that the second uterus is taken, and this I consider the most valuable for my purpose. You will observe on the surface of the ovary a follicle on the point of rupture. At some future date I hope to show you a section of this. Now comes the last period represented by the third uterus, viz., the period of quiescence which lasts for a fortnight,—the

whole cycle covering a period of from five to six weeks. The second uterus is the only one which has carried a fœtus—a healthy male, eighteen months old—which I still have in Johannesburg. The period of gestation is 7½ months.

VIII. *Dr J. Haig Ferguson* showed—(*a.*) ANOMALOUS PLACENTA. It will be noticed that the placenta is in two portions; the larger part, considerably more than three-fourths of the whole mass, has no membranes attached to it. This part was expelled first naturally; the smaller part with membranes and cord attached remained in utero. On compressing the uterus supra-pubically the smaller portion was expelled, and resembles a miniature complete placenta. The membranes are hanging complete round the periphery of this small placental mass except at one point, where it has been attached to the larger placental mass, and at that point the chorion is absent. The cord is attached eccentrically to this miniature placental mass. No force was required or used in the management of the third stage. The two parts seem to have separated, as the result of uterine contraction and retraction, along a line of cleavage consisting of the most slender attachment, and there is *apparently* but a very slight vascular connection between the two divisions. The labour was a normal one at full time, and the child was well developed and healthy.

(*b.*) IMPERFECT ABORTION. The specimen shows a flattened, somewhat withered fœtus of about the second month, almost papyraceous in appearance. The patient had a flooding when she imagined herself to be two months pregnant, and had all the symptoms of an ordinary miscarriage. Her medical attendant, however, could find no evidence of pregnancy in the discharge, but unfortunately everything had not been kept for examination. The patient after this remained free from red discharge for about a week, when she again began to bleed and continued to bleed continuously for eight weeks. At the end of this time, when she presented herself for examination, the uterus was the size of a two months' pregnancy, soft and painless to the touch, and a diagnosis of imperfect abortion was come to. The result of the curetting was, however, the present specimen, which evidently had thus remained in utero for eight weeks after death had occurred. There was no history of any fœtor in the discharge at any time.

IX. *The President* (*Dr Croom*) showed—(*a.*) LARGE TUMOUR from a case of Abdominal Hysterectomy; (*b.*) SPECIMEN from case of Vaginal Hysterectomy for SCIRRHUS.

X. LEOPOLD'S DESCRIPTION OF THE PLACENTA.

BY A. H. F. BARBOUR, M.D.

LEOPOLD'S Atlas, *Uterus und Kind,* is the most important contribution made to the Sectional Anatomy of Obstetrics during the

past year, and out of sight the most important that has yet been made to the Anatomy of Pregnancy as distinct from the Anatomy of Labour. It contains 30 plates, with sections of the pregnant uterus from the first week up to full time. The plates are beautifully executed, especially the black and white. In some of the coloured sections anatomical detail is rather sacrificed to artistic effect, so that they will not prove of so much value for the working up of fresh points, although they bring out admirably the special point which the writer has in view in reproducing them.

Many questions of interest are raised by the study of these sections. In this short paper we shall take up only 'the origin of the placenta.'

The most valuable section in the Atlas is that of the uterus and ovum at the end of the first week of pregnancy. It is the only one we have from this early date, and in passing we cannot help paying a tribute to the careful and accurate observation of the investigator, without which this unique preparation would have been lost. It has this history:—The patient, a multipara of thirty years of age, was operated on for cancer ten days after the cessation of her menstrual period. Sexual intercourse had taken place on the day following it, but not subsequently. After the uterus was extirpated it was laid open to ascertain whether the cancer had extended beyond the posterior lip where it began. Leopold was struck by the congested appearance of the mucosa, which led him to examine it more closely, when he noticed the slight elevation the size of a lentil seed on the posterior wall near the fundus. He says—'As there was not the slightest reason to suspect pregnancy from the clinical symptoms, the opened uterus would have been kept almost unnoticed, and a preparation of immeasurable value been lost, had we not turned our attention to the striking hypertrophy.' A less careful observer would have set down the congestion to endometritis associated with the new growth, and laid the specimen aside.

The drawing of the uterus laid open shows the hypertrophy of the mucosa, which stops short at the os internum. On the posterior wall, about a quarter of an inch below the fundus, is a round, somewhat flattened, elevation of the mucosa about one-third of an inch (7 mm.) in diameter. The section of the posterior wall (Fig. 1), made so as just to cut the cavity of the ovum on its right margin, shows even better the hypertrophy of the mucosa in its relation to the ovum. It increases to double its thickness as it comes near the ovum, diminishing again by one-half beneath it. The mucosa, 4 mm. thick at the fundus (*a*), increases to 8 mm. at the ovum (*c*), falls to 4 beneath it, rises to 8 mm. again below it (*d*), measuring 4 again lower down. That is to say, immediately round the ovum it is twice as thick as underneath it or beyond it, giving the appearance which Leopold compares to a stone set in a ring. A glance at the microscopic section (Fig. 2) will show that

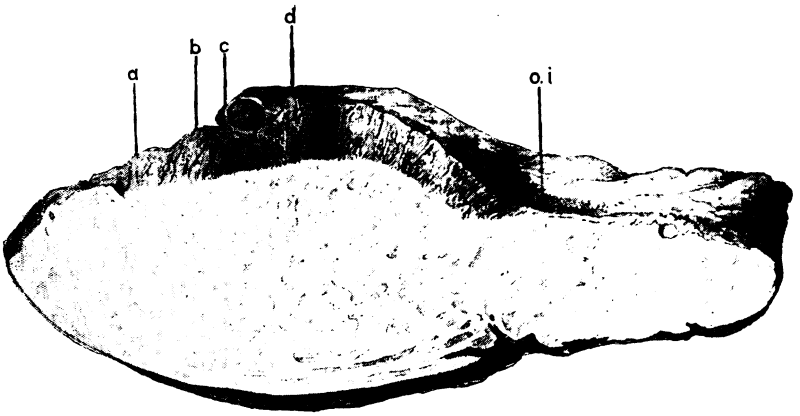


FIG. 1.

Section through posterior wall of uterus with ovum of about 7 days ; *o i—os* internum.

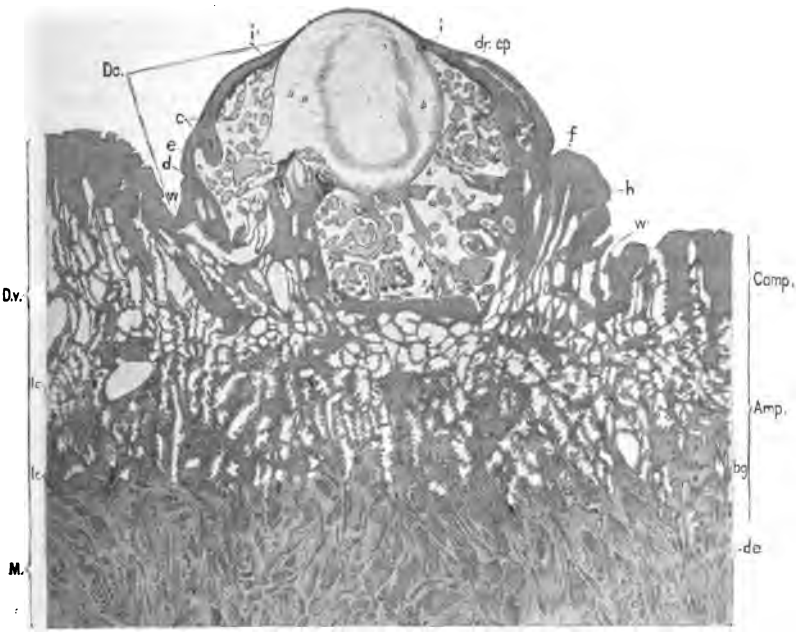


FIG. 2.

Microscopic section through same ovum.

M, muscular wall with ends of glands (*d e*) in it ; *D v*, decidua vera divided into compact (*Comp.*) and spongy (*Amp.*) layers ; *l c*, leucocytes in the lymphatics. *D c*, decidua reflexa or capsularis. In this, up to *d r c p*, gland spaces are seen ; above *i i* it consists mainly of fibrin. The ovum *b b* is resting on a spur of decidua. In the space between it and the reflexa are chorionic villi and processes of decidua ; and into this space a vessel opens at *c*. Opposite *h*, a villus is becoming rooted.

the mucosa has the appearance which we have come to associate with the early months of pregnancy. There is a compact and spongy layer, the former showing the drawn out necks of the glands, the latter their convoluted bases. The new point brought out by this section is that these changes are present as early as the first week of pregnancy. It shows how rapidly the growth of the mucosa takes place that we should find it hypertrophied to this extent within ten days of a menstrual period. The ovum rests within the reflexa on a fold of mucosa 'like a ship resting on a ridge of rock.' There is no epithelium on the top of the ridge though there is on its lower slope. Dilated gland spaces with cylindrical epithelium are seen in this fold, and into the mouths of one of these glands a villus has extended. At one other point there is an appearance as if villi had grown into the glands, but as this is seen nowhere else, its occurrence is accidental. The villi are usually applied to the surface of the mucosa and united to it by a layer of fibrin. The reflexa is thick below, but it thins towards the upper pole of the ovum. Glands are present, provided with epithelium at its lower part, and dilated capillaries, but as it thins its structure becomes indistinct. The chorion is closely blended with it, and while cells are seen here and there of decidual character, it is chiefly composed of fibrin. Within the reflexa are seen villi cut in various directions. They have a single layer of epithelium. In their stroma, vessels may be seen beginning to form. A young villus appears as a wart of epithelium—'a heap of syncytium,' within which connective tissue and a capillary appear later.

We also note heaps of decidual cells forming between the villi, which are the beginnings of the trabeculæ of decidual cells which are found in the fully-formed placenta. The ends of the villi stimulate the decidua to proliferate. 'Thus arise the heaps of cells which cause a general opening out and loosening of the superficial layer of the decidua, and at the same time a dilatation and bursting of the capillaries.' According to Leopold, 'the ends of the villi are continually shooting out tendrils winding in all directions. From this period they are already washed with maternal blood from the open capillaries, and open up still more these vessels, so that the blood now flows unhindered between the villi up to the chorion. We may satisfy ourselves of this relationship best when we follow under the microscope different sections, from the capsularis of the one side across the serotina to the capsularis of the other. First we observe between the villi a structureless, partly granular, partly crumbling mass, which contains quite distinct fine round pale red structures, viz., red and white blood corpuscles. Although those elements are not present in quantity we can make no mistake in regarding them as lymph corpuscles, and the more that they are found especially at the border of the decidua. And just here we see at different points

quite plainly, although the preparation was not injected, *how the surface capillaries open with their mouths into the spaces between the villi. It is thus demonstrated with certainty that the intervillous spaces are supplied with maternal blood from the earliest time of development.*' The italics are Leopold's.

The second preparation of a fourteen days' ovum embedded in the mucosa is not of the same value from the absence of exact clinical data. It was obtained from a suicide, and on inquiry it was ascertained that one period had been passed, but no further information was gained.

The chorionic vesicle is 14 mm. broad, 12 mm. long, and 5 mm. high, while that of the previous case is only 3·7 mm. broad and 4 mm. high. In the mucosa we note that the gland spaces are filled with irregular masses of swollen epithelium, and that the capillaries are greatly dilated both in the serotina and lower and middle portions of the reflexa, so dilated that 'it raises the question whether such an unusual dilatation of them may not be pathological.' At one point they appear almost as a lake. These spaces are lined by a distinct endothelium.

The reflexa here forms a complete envelope; its upper pole, which has no epithelium, being ·25 to ·5 mm. thick. It contains decidual cells similar to those found under the ovum. On the inner surface of the serotina no surface epithelium is seen, the blood bathing the surface of the decidua. Its tissue rises in processes, to the top of which a villus may be seen attached. The epithelial investment of the chorion is a well-preserved cubical epithelium in a single layer, with a nucleus at the bottom of the cell. Below this is a narrow layer of elongated cells with long spindle-like nuclei resembling somewhat the stroma, but more compressed and darker. The spaces between the villi are filled with blood, and their connection with the bloodvessels can be distinctly seen. Near the mouths of these vessels there are hæmorrhages into the mucosa, such as are seen in normal menstruation.

The questions which we look to such preparations as these to settle are, how is the early ovum attached, and how is it fed? A great deal has been written on these subjects, and there has been much reasoning, chiefly deductions from what is known as to the condition found at a later period of development of the human ovum, and by analogy from these processes as they have been traced out in other mammals. We cannot build too much upon a single preparation, and there is always the difficulty which Leopold hints at, that the appearance found in it may be pathological. This preparation is, however, of the greatest value as giving us a basis to start from. Although we have but this one preparation, yet it is the only one, and it is priceless.

It shows, for example, that there is no ground for the idea that the ovum becomes embedded in the raw surface, as some have

suggested. The desquamation of the mucous membrane at the menstrual period, and the fact that conception takes place shortly after it, gave colour to this hypothesis. The ovum is here, however, not embedded on a raw surface. It is rather perched on a fold of mucous membrane which has its surface epithelium still present on one side of it. The hypertrophy of the whole mucosa is also noteworthy. The rapidity with which that membrane can be regenerated after its destruction has been drawn attention to by Werth's investigations on uteri extirpated after curetting. Within five days after its removal by the curette he found the mucosa reproduced anew—with glands opening freely on the surface, and an unbroken covering of epithelium. In this case we have the additional stimulus of a growing ovum. But it is remarkable that the characteristic hypertrophy of the mucosa and its distinction into a compact and spongy layer, is present in about a week after impregnation. As we are speaking now of the hypertrophy of the glands, we note also that a week later we may have their hypertrophied epithelium breaking away and forming masses blocking their lumen.

Another view that has been suggested is that the villi become in the first instance rooted in the gland cavities. This view, which Sir William Turner combated, has recently been revived by Reichert from the study of his ovum, which until this preparation which Leopold has described took its place as the youngest ovum known. The appearance seen at two points of Leopold's section of a villus in the glands might at the first glance give colour to this hypothesis, but on looking all over the preparation it is evident that this is a mere accident, and that the attachment of the villus is to the surface of the decidua, and in the first instance by fibrinous adhesion, and in the later stage by the villus being embedded among the decidual cells. The attachment of the ovum, however, by the villi is at first loose, and as Leopold says it might easily be washed away were it not for the ring of the reflexa clasping it. The mode of closure of this ring in its upper pole is of interest, as it suggests a process similar to what Hubrecht describes in the hedgehog. In that animal a hæmorrhagic œdema occurs at the lips of the opening at the upper pole, and a blood extravasation takes place by which the ring is closed. This preparation then confirms the mode of attachment of the early ovum which has been generally received since the time of Hunter. He introduced the terms reflexa and serotina, through a mistake as to their mode of formation, the term reflexa implying that the ovum carried the hypertrophied mucosa before it when it entered the uterus, stripping a portion of the uterine wall bare, which was covered later by decidua—hence the term serotina. For these terms Leopold substitutes decidua capsularis, and basalis, which are certainly more correct. Hunter's nomenclature, however, although it perpetuates a misconception, has passed into such general currency

that the changing of terms does not seem worth while, as the gain in scientific accuracy hardly compensates for the confusion caused by introducing new terms.

While in error as to the mode of formation of the decidua, Hunter's description of its disposition has been established by all that has been discovered since by microscopic investigation, for which, of course, he had not the methods which we have now. The new points brought out by this section of Leopold's are the mode of closure of the upper pole of the reflexa, and the mode of attachment of the ends of the villi.

While we are on firm ground in considering how the ovum gets its hold, we are plunged at once into a questio vexata when we consider how it gets its food. The gist of his conclusion is that at this early stage we already find what has been described in the fully-formed placenta at the fourth month, and that it arises in a simple way. We see here little processes of decidual cells growing out into the cavity between the chorion and decidua, which foreshadow the decidual trabeculæ of the fully-formed placenta. Further, we find in the space in which the villi lie, maternal blood, and the maternal vessels already opening into this space. His account of the commencement of the circulation which I quoted in full, is lucid, but not convincing. It is hard to see how a circulation can be established in this way. The difficulty is not as to the blood finding its way out of the vessels into a space, but how it finds its way from the spaces back into the vessels again.

The process described is analogous to that of blood extravasation, and the appearance of the blood as described in the first specimen is suggestive of this.

The channel must be built before the water finds its way along it, or the result is a marsh, not a stream. It seems to me that in the process of gradual dilatation of the capillaries without rupture, we must look for the commencement of maternal circulation in the placenta. It is quite possible that after the sinus has been formed, the villus may come to lie in it with only a single layer of epithelium. But the sinus must be formed first.

Is it not possible that in the dilated sinuses which are present in the second preparation, and which Leopold thinks pathological, we have the structures which are to become the sinuses of the placenta, and that at this stage the embryo is nourished by an exudation of lymph into the spaces in which the villi are now lying?

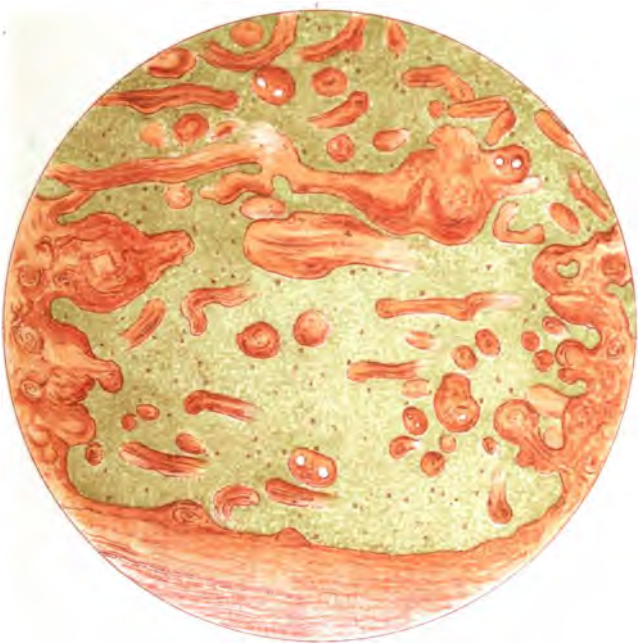
Besides these two sections of an early ovum, a series of beautiful sections are given of the placenta at the fifth and ninth months, as well as a drawing of the structure of the placenta made from an injected placenta by the removal of the smaller villi so as to make the stems of the villi and the septa of decidua stand out. The results thus obtained are chiefly confirmatory of those reached before by Leopold and others. They show the maternal sinuses

separated by trabeculæ of decidual tissue. Leopold differs from Hofmeier and Bloch in maintaining that these processes of decidual tissue carry arteries which open into the spaces in addition to those which open at their base. Within the placental sinuses the villi are seen, some free, others rooted in the serotina and the trabeculæ. As but little blood is found in the placental sinuses the investigation of their disposition has been carried out by artificial injection. This is always open to the criticism that it may disturb the natural relations. In cutting a section of placenta and uterus removed by Porro's operation some years ago, I was fortunate enough to hit upon a bit of placenta in which the sinuses were distended by maternal blood. Before cutting into the uterus at the operation, it had been constricted by an elastic ligature, which may account for the retention of more blood in the maternal portion of the placenta. However the condition was produced, the sections obtained (see coloured Plates, which give sections under a low and high power) had a beautiful demonstration of the relation between the fœtal and maternal relations in the placenta. You have here a natural injection of maternal sinus, and the high power shows the thickness of tissue intervening between the two blood streams.

It is beyond the province of this paper to go more fully into the structure of the placenta. The point at issue is as to its origin, that is to say, when do the sinuses arise, and how? And we do not think that these sections establish Leopold's conclusion that 'already in the second or third week of pregnancy we have intervillous spaces communicating directly with the bloodvessels, and therefore must reject the view hitherto received that the spaces do not develop till the fifth month.'

There is another way of interpreting the appearance in it in these specimens, according to which we might quite well have at this stage blood spaces with vessels opening into them.

If it should be shown that Hubrecht's description of the origin of the placenta in the hedgehog is applicable to the human female, there may be already at this period a system of vascular lacunæ communicating with maternal vessels. According to his observations the new forming vessels in the maternal decidua have an unusual mode of development. In what he calls the vasifactive tissue (that is to say, what we might describe as the commencement of the first stage of growth of vessels while they are still solid), the cells which would under ordinary circumstances form the endothelium of a capillary, become large and arranged in a peculiar way with spaces between them, so that a mass of spongy tissue takes the place of the capillary; and the spaces in this sponge come to communicate with spaces between the cells of the fœtal epiblast. So that you have maternal blood from the very first, circulating not only between the cells of maternal tissue, but also between those of the fœtal tissuess. If



Section of a PLACENTA removed by Porro's operation, showing the sinuses distended with maternal blood (stained with picro-carmine).

Trabeculæ are seen on either side, forming the walls of the sinus. Foetal villi, free and attached, are divided transversely and longitudinally.

SCOTT & FERGUSON EDINT

Section from the same placenta as given in previous plate, under a high power; to show the relation of the maternal and foetal blood streams.

As both the foetal villi and the maternal sinus are distended with blood, the relation of the blood streams is demonstrated by a natural injection.

Note that the villi lie free in the maternal blood, which forms the bulk of the section. The course of the foetal vessels in the villus, and the thickness of tissue separating the two blood streams are clearly seen, though the staining does not bring out the epithelium of the villi.

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this occurs in man, then we must regard the interval between the ovum and the maternal tissue not as an open space into which on the one hand fœtal villi, and on the other decidual trabeculæ grow in, but as due to excavations, if I may use the term, in a mass previously solid. If this be so, then these cells which look like processes of decidua, and the epithelium which suggests a surface of mucosa not yet eroded, are the relics of cells which are analogous to Hubrecht's tropho-blast and tropho-spongion. This is quite a different way of accounting for the appearance in this preparation, and is also thinkable; as, to return to my illustration, the pipes are laid down before the water passes along them. The development of a placenta is not due to the eating of villi into already existing vessels, but to the growth of vessels of a peculiar type.

Prof. Simpson had listened with great interest to Dr Barbour's description and discussion of Leopold's beautiful plates. When he (Prof. S.) read Leopold's explanation of his drawings, he had felt that the interpretation of the formation of the intervillous spaces was not entirely satisfactory, and was disposed to think that Dr Barbour's suggestion had an element of great probability in it. In the recent Transactions of the German Gynecological Society was a brief account of a still younger ovum by Peters, from the full study of which some good results might be expected.

MEETING III.—JANUARY 12, 1898.

Dr R. MILNE MURRAY, *Vice-President, in the Chair.*

I. The following gentlemen were duly elected Ordinary Fellows of the Society:—Bernard S. Story, M.D., F.R.C.S.E., 9 Richmond Crescent, Roath, Cardiff; Alexander Macdonald, M.B., C.M., 11 Ardmillan Terrace, Edinburgh; G. R. Livingstone, M.B., C.M., Rotunda Hospital, Dublin; and C. C. Forrester, M.B., C.M., 12 Greenhill Place, Edinburgh.

II. *Professor Simpson* showed—(*a.*) ANENCEPHALIC FŒTUS WITH SPINA BIFIDA. Miss J. M., nullipara, æt. 39; admitted Nov. 30. Sent in as case of ovarian tumour. There had been amenorrhœa for six months, and there was also a history of morning sickness. Physical examination showed no change in the mammæ. There was a well-marked abdominal tumour reaching to the umbilicus, and alternate relaxations and contractions could be readily felt. Uterine bruit could be heard, but no fœtal heart sounds. There was well-marked discoloration of the vaginal walls. On December 22, while sitting up in bed, the membranes suddenly ruptured, slight hæmorrhage occurred,

and labour pains came on soon after. An anencephalic six months' fœtus was born. Recovery uninterrupted.

(*b.*) Two specimens of EARLY EXTRA-UTERINE GESTATION, of which the following were the notes:—Mrs O., æt. 38, ix-para; admitted December 3, 1898, complaining of pelvic pain and pain under left breast. *History.*—Ten weeks before admission she was seized with sharp pain in the pelvis. This was accompanied by faintness, sickness and vomiting, and cold sweats. The pelvic pain and vomitings had continued up to admission. She had suffered also lately from retention of urine, and since illness began there has been an irregular hæmorrhagic discharge. *On Vaginal examination* a firm, sensitive swelling was felt in the pouch of Douglas, extending to the right side and fixed. Uterus not enlarged. Operation, December 4. On opening abdomen a tumour was found in region of right appendage, surrounded and fixed by numerous adhesions. These were broken down, and the mass, which proved to be the distended right Fallopian tube, removed. The tube contained a large amount of recent blood-clot, and at one part placental tissue. No fœtus was found. There was evidence also of old hæmorrhage, as if the sac had burst some time previously. Recovery.

Mary S., æt. 44, xiv-para. (Two abortions, last 6½ years ago.) Admitted December 8, 1897. Complaint, pain in right side and lower abdomen. Duration since July. *History.*—Patient says she has not missed any periods, but menstruation has been very irregular and profuse for some time. *Per vaginam*, an irregular painful swelling was felt in the region of the left ovary and tube. Bimanual examination was difficult, owing to thickness of abdominal walls. On *abdominal section* the right ovary was found to be enlarged and cystic. Tube fairly healthy. Left appendages were adherent; the ovary enlarged and cystic; and the tube was enlarged, distended, and ruptured about midway between its extremities. From this rupture blood-clot protruded, and the whole mass was surrounded by firm adhesions.

(*c.*) FOUR UTERI REMOVED BY VAGINAL HYSTERECTOMY, of which the following were the notes:—Mrs T., æt. 29, nullipara. Admitted December 11, 1897. Complaint, pain in left groin, pain in back and pelvis. Amenorrhœa and leucorrhœa for six years. *Per vaginam*—On vaginal examination there was found to be very extensive matting of all the pelvic organs, and on left side an irregular cystic mass could be felt in region of the left ovary. On account of the severity of the patient's symptoms, it was decided to remove the uterus and appendages by vaginal hysterectomy. December 27, vaginal hysterectomy. Owing to great matting of tissues operation was very difficult. Cystic swelling behind uterus on left side seemed to be a small dermoid cyst, which was opened into during operation. Appendages could not be completely removed. Jan. 1—Patient did pretty well for first few days, but then developed a slight erythematous rash over chest, which gradually extended.

January 4—Removed to Observation Ward. January 12—Patient became very ill and died.

Eliza D., æt. 50, xv-para. Admitted December 14, 1897. Complaint, uterine hæmorrhage. Twelve months' profuse leucorrhœa and passing in the discharge of gelatinous organised tissue. Vaginal and bimanual examination—The uterus is enlarged to about size of three months' pregnancy. From size of uterus, history of rapid growth, and character of discharge, diagnosis of sarcoma uteri or fibroid undergoing malignant degeneration was made. Vaginal hysterectomy, December 12, 1897. Owing to size of uterus the operation was difficult, and the tumour masses in the uterus had to be partly removed before it could be finished. The interior of uterus was occupied by soft sarcomatous tissue, an outgrowth from one of the nodules in the uterus. Patient made an excellent recovery.

Mrs R., æt. 44, xii-para. Two abortions. Admitted Dec. 10. Complaint, floodings for eleven weeks, and severe pain in back and iliac fossæ. Vaginal examination—Cervix was seat of soft, friable, carcinomatous growth, which bleeds very readily. Discharge very fœtid. Left broad ligament seems slightly infiltrated, and cervix is drawn over to that side. Vaginal hysterectomy, December 20, 1897. Recovery, although after removal of clamps there was hæmorrhage, which recurred later, and delayed convalescence.

Mrs S., æt. 45, i-para. Admitted December 6, 1897. Complaint, pelvic pain, menorrhagia, metrorrhagia, and foul-smelling discharge. Duration, six months. *Per vaginam*—Well-marked carcinoma cervicis, involving to a slight extent the post-vaginal wall in its upper part. Vaginal hysterectomy, December 20, 1897. Patient did well.

III. *Dr Haultain* showed an EXTRA-UTERINE TUBAL MOLE, which was removed for free, profuse, intra-peritoneal hæmorrhage. The situation of the ovum on the free fimbriæ of the tube and not in its lumen was to be considered of some interest.

IV. *Dr J. W. Ballantyne* showed—(*a.*) FROZEN SECTIONS and DRAWINGS of a FŒTUS WITH RETROFLEXION AND TORSION OF THE SPINE, AND MENINGOCELE, which Dr Milne Murray had kindly handed to him for examination. The fœtus was a female, and had club-foot in addition to the above-named anomalies. The meningeal sac, containing blood-clot only, lay upon the angle of flexion of the cervical and dorsal spine, and was specially well seen in the mesial section.

(*b.*) PHOTOGRAPH of a TERATOLOGICAL CHICK, which had been sent to him by Mr Alfred H. Loeb, of Montreal, Canada. It was the result of the incubation of a large egg which had a double yolk. There was a pair of supernumerary legs, and these seemed to have a distinct articulation slightly posterior to the normal set. The pelvis was larger than usual. The chick lived for about two weeks. The egg had been placed under a sitting hen.

V. THE OCCURRENCE OF A NON-ALLANTOIC OR VITELLINE PLACENTA IN THE HUMAN SUBJECT.

By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E., Lecturer on Midwifery, Minto House, Edinburgh.

Over and over again teratological phenomena have found a ready explanation in the facts of embryology, and conversely instances are not wanting in which our knowledge of embryological processes has received enlightenment by the study of conditions which are manifestly abnormal. The abnormal has served to explain the normal just as the normal has afforded the key to the understanding of the abnormal. In this communication I hope to throw what may be called a teratological side-light upon the development of the human placenta; I purpose to make a suggestion which, although somewhat startling, is yet, I am convinced, worthy of consideration. I have delayed bringing forward my facts for some time for the reason that they are admittedly imperfect and insufficient for complete proof; but in the absence of confirmatory evidence it has still seemed worth while for me to state the circumstances of the case, in the expectation that other observers may be able either to support my contention or to disprove it.

The specimen which first suggested to my mind the possibility of the occurrence of a vitelline placenta in the human subject was that of a sympodial or sireniform fœtus which was kindly sent to me for examination by Dr John Tod of Leith. The monstrosity was shown at the meeting of the Edinburgh Obstetrical Society on February 14, 1894. The clinical history of the case must now be narrated, and an account be given of the morbid anatomy of the fœtus in so far as it has a bearing upon the question of the development of the placenta.

Description of a Fœtus Sympus Dipus.

Clinical History.—The following details were kindly furnished by Dr John Tod, in whose practice the case occurred. The mother of the sireniform fœtus was 25 years of age and a iii-para. She had been married for four and a half years, and had always been a healthy woman. Her first child, a girl, was born one year after marriage, and is now alive and well. The second, also a girl, born about two years later, was alive and well at birth, but died eleven weeks thereafter from hydrocephalus. The third infant, that now to be described, was born a year and a half after the second. The mother has had no miscarriages and no plural pregnancies.

She last menstruated from April 23 to May 1, 1893, and she dated her conception from that time, although she had a slight discharge, lasting for two days, on May 25. She first felt life at

the end of September or the beginning of October. Her health was quite good during her pregnancy, but at the third month (according to her reckoning), as she was leaning out of a window, she nearly fell over, and bruised severely the lower part of her abdomen. This accident caused her great pain for a few days. She also states (after having heard that her offspring was monstrous) that deformed persons have always exercised a great attraction over her, and she has even followed them in the street. She cannot, however, recollect having been specially impressed by any particular one during this gestation. Possibly it might be as rational to believe that the birth of the *siren* fœtus in a *seaport* town was more than a coincidence, as to lay any weight upon such an obscure reference (after the event) to the maternal imagination.

Labour began at 6 A.M. on February 11, 1894; at the full term of pregnancy, therefore, if the patient's calculation was correct. The pains were very slight, but became stronger at 6 P.M., when the waters came away. A midwife was in attendance, and she states that there was not much liquor amnii, and that there never was a proper bag of membranes. The uterine contractions became very violent at 10.30 P.M., and the tail-like extremity (fused lower limbs) of the fœtus protruded from the vagina. This the midwife mistook for a hand and arm, and, thinking she had to do with a cross-birth, she sent for Dr Tod to manage the confinement. It may be here stated that the mother felt fœtal movements immediately before the protrusion of the fused lower limbs. Dr Tod found, on his arrival, that labour had progressed, for now the trunk of the fœtus along with one arm (the left) was born; the right arm was up alongside of the head, but was easily brought down. The back of the child was to the mother's right side. Some time elapsed before the fœtal head, which was very large, could be extracted; but this was at last effected by strong traction, some of the cranial bones giving way during the act. The placenta and membranes were removed manually and were much broken up in the process; but they did not, Dr Tod says, appear to be abnormal. The infant was dead. The puerperium was quite normal.

The father was a healthy man, but there was a family history of phthisis. There was no record of the birth of monstrous infants on either the paternal or maternal side.

It is, of course, a matter for profound regret that the placenta and membranes were not kept for examination, and that we are forced to rely upon the casual inspection of them made in the hurry and confusion incident to the birth of such a startling phenomenon as a sireniform fœtus. I have waited nearly four years in the hope that another specimen with the placenta might come into my hands, but in its absence I am forced to be content with the present imperfect one.

Morbid Anatomy.—The fœtus, whose sex was not evident externally, weighed 2902 grammes, and had a total length of 50 cms. It is unnecessary for my present purpose to give the various measurements in detail; suffice it to say that they proved that the head was disproportionately larger than the other parts, and that the girth of the body in the abdominal and pelvic regions was much less than normal. The fœtus had, from the umbilicus downwards, a steadily diminishing circumference, which was manifestly due to the nature of the deformity.

External Appearances.

The external appearances of the monstrosity, as seen from the front, are well exhibited in Plate I.; but the large size of the head is not so evident as it was at birth, for before the specimen could be photographed a good deal of the fluid had escaped therefrom. The nature of the teratological condition is seen at a glance; it consisted in the union of the lower limbs into one appendage, resembling somewhat the tail of the mythical mermaid.

The head was, as has been noted already, abnormally large; and palpation revealed the presence of a large quantity of fluid beneath the scalp. It was at first thought that the bones of the cranial vault were membranous, for no osseous structures could be felt; but this impression was corrected by the subsequent dissection. When the fœtus was laid upon the side the head became elongated vertically and the surface resting upon the support became quite flat. A considerable number of dark hairs was found upon the scalp, especially posteriorly. There was evidence of an unusually large quantity of subcutaneous tissue in the face, especially in the region of the cheeks and under the chin; in fact, the palpebral fissures lay in two deep hollows, and there was what might be called a double-chin.

The eyelids were normal, but the membrana pupillaris seemed still to be present. The root of the nose was much depressed; and the nose itself was flattened out, and lay in a hollow between the two projecting cheeks. The mouth was open, and the tongue protruded slightly. The left ear was more prominent than the right, and from its meatus blood was flowing at the moment of birth.

The neck and thorax presented no anomalies on external examination. The arms were well formed, and, when hanging down by the sides, reached to the level of the flexure between the trunk and the single lower extremity. There was no syndactyly, the fingers being normal in number, size, and relations.

The small size of the abdominal part of the trunk was very evident. The stump of the umbilical cord was still attached, and measured 9 cms. in length; and in it only two vessels could be seen—an artery and a vein. The anterior surface of the abdomen

PLATE I.

Sireniform Fœtus. Anterior Aspect.

PLATE II.

Sireniform Fœtus. Posterior Aspect of Fused Lower Limb.

was flat instead of slightly convex; indeed, in its lower part it was even concave. At a distance 6 cms. below the umbilicus, slightly to the right of the middle line, and at the level of the flexure between the trunk and the sireniform lower limb, was an imperforated penis-like body, with no prepuce, measuring about 1 cm. in length. This was the only external indication of genital organs. On the posterior aspect of the trunk (Plate II.), and at a point a little below the level of the umbilicus anteriorly, was a linear depression with a vertical direction surrounded by some slight radiating furrows. This may have indicated a rudimentary gluteal cleft; but there was no trace of an anal aperture.

The single lower limb, on account of its median position and by reason of the number of toes it carried, gave indications of its composite nature. It could not be extended beyond a straight line with the trunk, but was easily flexed on the abdomen, and when so placed, its tip reached the nose. Naturally there was a tendency for the limb to take up a flexed position obliquely across the trunk towards the right side, the toes coming to lie near the right ear. The leg could be, to a small extent, flexed anteriorly on the thigh; but the chief movement was at the hip joint, which seemed to be mesial in position. Scarcely any motion was to be elicited at the ankle joint. The sole of the double (or fused) foot was directed forwards and to the infant's right; it was divided by a deep groove into two parts, one of which carried two large toes, while the other had four smaller ones attached to it. The dorsal surface of the foot looked backwards and to the left. All the six toes carried nails. The largest toe was also the anterior one of the series; it was followed by a second large digit; then intervened the furrow, to which allusion has been made; and then came the third, a small fourth, and larger fifth and sixth toes. They were arranged in three pairs—two external and one situated mesially—and they were evidently the remains of two sets of five digits which had been rotated and were united together by their external borders, the great toe in each series coming to lie externally. Evidence of the rotation of the fused limbs was also found in the position of the patella, which was situated posteriorly; the representative of the heel was directed forwards and to the right side. One bone was felt in the thigh, and two could be palpated in the leg. The posterior aspect of the single lower limb was somewhat convex, while the anterior was flat or slightly concave.

Dissectional Appearances.

Under the scalp and over the vertex and sides of the cranium was an enormous sub-aponeurotic cephal-hæmatoma. The anterior fontanelle was large, measuring 6 cms. antero-posteriorly and 3·5 cms. transversely. There had evidently been internal hydrocephalus; but on account of the pressure to which the head had

been subjected during labour, the fluid had been effused throughout the cranial cavity. There was also a fracture of the basis cranii.

When the thoracic cavity was opened the heart was seen lying in the pericardium on the left side, with the thymus in front of it. There was no marked apex to the heart, but the four cavities were present, and the great vessels seemed normal. The left lung measured 4·5 cms. vertically and showed two lobes, while the right measured 4 cms. and showed three lobes, the third, however, being very rudimentary. The lungs were quite unexpanded.

The most interesting anatomical characters were disclosed when the abdominal cavity was opened. The most noteworthy structure was a largely distended coil of colon, which occupied the middle and left side of the abdomen below the liver. This part of the bowel was distended with meconium, and consisted of the cæcum and appendix vermiformis (1 cm. in length), which lay in the *left* hypochondrium, and of a loop about 9 cms. in length, which passed upwards and to the right, and then turned downwards to end in a free blind extremity. It was at its commencement adherent to the lower surface of the left lobe of the liver and to the posterior abdominal wall, in the position where the splenic flexure ought to have been found. There was no sign of omentum; and evidently only the cæcum and part of the ascending colon were present (in an abnormal situation), the transverse and descending colons, the sigmoid flexure and the rectum being entirely absent. The stomach, partly covered by the left lobe of the liver, appeared to be normal; attached to the left side of it was the spleen, measuring 3 cms. in length and lying close to the posterior abdominal wall under the diaphragm. All the coils of small intestine were found situated posteriorly in the left hypochondriac and left lumbar regions, and those lying next the posterior abdominal wall were noticed to be adherent to it just below the spleen. The liver had the size usually noted in the full-time fœtus; its left lobe was displaced somewhat downwards, while its right was doubled slightly on itself. On its under surface could be seen the collapsed gall-bladder; but no sign of the ductus venosus was visible. On looking for the umbilical vein, it was observed that the vein in the umbilical cord passed upwards and entered a tunnel in the liver between the right and left lobes, and therein seemed to break up in the hepatic substance. Attention was now turned to the artery in the cord. It was found that a single vessel came off from the abdominal aorta about the level of the second or third lumbar vertebra, carrying with it a fold of peritoneum. It passed directly forwards in the middle line of the body to the anterior abdominal wall, which it reached a little above the symphysis pubis, and it then turned upwards along the posterior aspect of the anterior abdominal wall

for a distance of about 2 cms., to reach the umbilicus and become the single artery of the umbilical cord. It thus slung, as it were, a diaphragm of peritoneum right across the abdomen a little above the plane of the brim, and so shut off the abdominal from the pelvic cavity. On the surface of the peritoneum a testicle was present on the left side about the level of the pelvic brim and in the position of the internal inguinal ring, of which, however, there was only a trace; on the right side a similar body was found, but at a higher level, and not far from the vertebral column, and from it a cord passed downwards to the inguinal ring. There existed no indication of urinary bladder, urachus, hypogastric arteries, or ureters. At first sight it was thought that the kidneys were also absent, but they were afterwards found as two reniform flattened bodies, of a thickness slightly greater than that of paper, lying behind the peritoneum and below the diaphragm. The left measured 4 cms. vertically by 2 cms. transversely, and the right 3 cms. by 2 cms. Supra-renal capsules were not observed. The aorta, after giving off the artery above mentioned, passed as a much smaller vessel into the pelvis, where it gave off lateral branches. The dissection of the fused lower limb need not be described here, as it has no immediate bearing on the question now being considered.

Relation of this Case to the Origin of the Placenta.

In this extraordinary fœtus, then, is to be noted the entire absence of the lower end and of the greater part of the large intestine, of the bladder, of the urachus, of the ductus venosus, and of the hypogastric or umbilical arteries. In the umbilical cord are found two vessels, an artery and a vein; the former arises directly from the abdominal aorta and pursues a course to the umbilical ring quite unlike that which a hypogastric artery follows, while the vein, although passing like an umbilical vein to the liver, does not bear the usual relations to that organ, but passes deeply into its substance and is not continued as a ductus venosus. Yet, with the existence of all these structural anomalies, we have the record of a placenta and membranes which, while they may have been unduly adherent to the uterus, did not strike the medical attendant as abnormal in appearance.

If we look now at this matter from the standpoint of embryology, we realise that in this fœtus the structure from which the allantois is believed to be formed is absent, I mean the lower part of the alimentary tract; while the structures which are derived from the allantois and its attached intestine, viz., the bladder and urachus, are also wanting. As to the vessels of the allantois, it can scarcely be accepted that the artery and vein found in the umbilical cord have either the arrangement or relations which the allantoic vessels are commonly supposed to have, and it may even at this stage of the inquiry be regarded as probable

that the artery and vein found in this case are not allantoic in origin at all. Here, then, there is an absence of the structure which gives origin to the allantois, of the structures which are derived from the allantois, and probably also of the allantoic vessels. These are the parts which embryology has taught us to believe are essential to the formation of the fœtal parts of a placenta, for it is through them that the chorion is supposed to be vascularised in the part of it which is related to the utero-placental decidua. Nevertheless, in the case under consideration, in which these parts were absent, the placenta was present. Of course it is regrettable that the placenta is not available for examination, and it may be that it was markedly abnormal; yet too much may easily be made of this view, for it must be borne in mind that the placenta, whatever it may have been structurally, was functionally perfect enough to serve for the growth and nourishment of a fœtus, deformed, it is true, but still large and mature.[1] This case, therefore, seems to show that without the help of the allantois and its vessels a placenta may be formed sufficiently satisfactory to bring the fœtus to the full term. In order to bring about this result the chorion must have been vascularised by some vessels other than those of the allantois, and naturally enough the omphalo-mesenteric or vitelline vessels suggest themselves as possible substitutes. As a matter of fact, the vessels present in the cord of the sympodial fœtus which I have just described, very closely resemble in their course and arrangement, inside the abdomen, the state of matters which would be expected if one of the omphalo-mesenteric arteries and one of the omphalo-mesenteric veins were to persist to the end of fœtal life. The view which I took of this case more than two years ago was, therefore, simply that the vitelline vessels had in the absence of the allantoic vessels taken on the function of vascularising the placenta, and had succeeded in forming what may be called a very fair working organ. Manifestly, however, it would have been rash to have advanced a view so novel and so much opposed to what may be called the classic theories of placenta-formation without a wide survey of all the bearings of the subject. I therefore set myself the task of attempting to answer the following questions:—

1. Do the other reported cases of the sympodial monstrosity furnish details regarding the placenta and the vessels of the cord, which support or refute the above expressed theory of placental formation in this group of terata?

2. Is there anything in the current theories explaining the origin of sympodia which would support the idea of the formation of a vitelline placenta?

3. Are there any other forms of monstrosity in which the

[1] It measured 50 cms. in length, and weighed nearly 3000 grammes.

fœtal part of the placenta seems to arise from vascularisation of the chorion (entirely or partly) by the vitelline vessels?

4. What light does comparative embryology throw upon the occurrence of a vitelline placenta?

5. Do recent researches in human embryology fully sustain the classic theory of placenta-formation by means of an outgrowing allantois and allantoic vessels, or have they modified this belief in such a way as to render the occurrence of a vitelline placenta more easy of acceptance?

1. *The Placenta and its Vessels in Sympodia.*

In order to answer the first of these questions, viz., the inquiry into the state of the placenta and its vessels in reported cases of sympodia, a very large amount of research has been rendered necessary. In all, about 120 cases of sympodia have been recorded at various times and in different countries, and it has been found possible to obtain access to the original notices of 110 of these. With regard to the remaining ten, I have been able to obtain some information, and I do not think that fuller details of them would alter the conclusions to be drawn from the study of the others.

The first result of this research was disappointing in the extreme. *In only eleven out of the* 110 *cases was there any allusion made to the placenta.* A closer inquiry into these eleven cases served only to increase my disappointment, for in but two of them was there anything like a description of the placenta, and in none was there an account of its microscopical characters. A more complete demonstration could scarcely be obtained of the need for the warning which I have frequently given, that it is essential for the better understanding of antenatal pathology to preserve both placenta and infant. The following are the facts, scanty as they are, regarding the state of the placenta in these cases of sympodia. In Koehler's specimen (34)[1] the placenta was described as regular, and it had the cord inserted into its margin; in G. P. J. Wolff's (42) there is no description in the text, but in the accompanying plate the placenta, with what seems a marginal insertion of the cord and a large succenturiate lobe, is figured; in Dunn's case (51) it was stated that one half of the placenta was thinner than the other, and that there was a hard ridge between them; in the record given by Gerrard (58) there is the information that the placenta was retained and that the liquor amnii was in excess; in J. B. S. Jackson's record (70) the placenta was pale in colour and measured from 3 to 4 inches in diameter; in W. Maclaren's (76) it was fatty and very friable; and in S. F. Taylor's (81) it was described as healthy, and the liquor amnii was said to be in no way peculiar. Labougle

[1] The figures within parentheses refer to the bibliography at the end of the paper.

and Régnier (92) paid more attention to the state of the placenta: it weighed 450 grammes and was quite normal ('absolument normal'), the membranes were also healthy, and there were about 300 grammes of liquor amnii. Cosentino (108) described the placenta as circular, flattened, and atrophic, weighing 350 grammes; and in the symelian monstrosity recently reported by Pinard and Varnier (116) the placenta weighed 680 grammes, but was otherwise normal. The best description was that given by L. Clauss (113); the placenta weighed 300 grammes, and had a diameter of from 10·5 to 12·5 cms., the cord was inserted marginally, the vascular network on the fœtal surface was strikingly little developed ('auffallend gering entwickelt'), on both the fœtal and maternal surface, but specially on the former, there were small white infarcts, and on the surface of the amnion next the placenta was a mass of yellowish-white tenacious mucus. If I now add to these records the statement that the placenta, in the case just described by me, was adherent but did not appear to be abnormal, we have before us the whole evidence bearing upon the state of the placenta in sympodial monstrosities. It may be argued that the very smallness of the evidence is proof that the placenta commonly presented no very marked anomalies; but it must be remembered that in most cases the very careful anatomical descriptions of the fœtus were made by observers to whom the specimens were sent by obstetricians and midwives, and who had had no opportunity of seeing the after-birth. All that may safely be concluded from a study of the information at our disposal, is that in sympodia the placenta may be, in some cases, apparently quite normal, but has a general tendency to show abnormities in its size, its shape, its consistence, and in the mode of insertion of its cord. Such a conclusion *suggests* an abnormal mode of placenta-formation.

An inquiry into the state of the umbilical cord in the 110 cases of sympodia yielded much fuller results, for in at least thirty-nine instances some details were forthcoming. In not one of these was there the description of three vessels in the cord; but in thirty-four cases[1] one artery and one vein were noted, and in one very remarkable instance the author [Majer (24)] stated that there were four vessels in the cord, and he enumerated them as one umbilical artery, one umbilical vein, and two omphalo-mesenteric vessels, which unfortunately he was unable to trace to their origin. Further details regarding the cord were seldom given, but in five cases [Vildieu (31), Jackson (70), Hempel (72), Gebhard

[1] Those reported by Hottinger (7), Sue (9), Boerhaave (11, 12), Rossi (15), Sachsse (16), Otto (18), Dieckerhoff (19-21), Meckel (23), Behn (29), Vildieu (31), Koehler (34), G. P. J. Wolff (42), Huesker (43), Otto (44, 47), Langsdorff (52), Vrolik (56), Orsolato (60), F. Wolff (61), Jackson (70), Solger (73), Kidd (77), Graetz (83), Gebhard (88, 89), Schwing (91), Labougle and Regnier (92), Benington (93), Ruge (95), Odisio (96), Peters (97), Arnold (110), Clauss (113).

(88), and Clauss (113)] it was decribed as thin, ribbon-like, and lacking in Wharton's jelly, while in one instance (Gebhard, 89) the Whartonian jelly was said to be plentiful. It was coiled once round the neck in two cases [G. P. J. Wolff (42) and Clauss (113)], and it had a marginal insertion into the placenta in two [Koehler (34) and Clauss (113)]. Its length was seldom noted, but it was 25 cms. in Cosentino's case (108), 45 cms. in Labougle's (92), and 67 cms. in that of Clauss (113). In one case (Otto, 44) there was a loop of intestine in the cord, and in two instances, in which the sympodia was complicated by exomphalos, there was really no cord at all [Dalkowski (59) and Otto (45)]. In Cosentino's specimen (108), although exomphalos existed, there was nevertheless an umbilical cord, which in the first third of its length contained Whartonian jelly, and in its remaining portion was of the size of a goose quill, and was composed of vessels and atrophic perivascular connective tissue. From these records it may safely be concluded that in the sympodial fœtus the umbilical cord contains only one artery and one vein, and that it sometimes has a thin ribbon-like appearance indicating the presence of an insufficient quantity of Whartonian jelly. The examination of the extra-abdominal portion of the funis, however, does not give any information regarding the origin of its vessels; and it is necessary, therefore, to inquire into those records in which details of the circulatory system are furnished.

In thirty-five out of the 110 cases a more or less complete account of the abdominal bloodvessels was given. From an examination of these, it appeared that in twenty-five[1] at least the single artery of the umbilical cord arose directly from the descending aorta at a point varying in level from the eighth dorsal vertebra (in Labougle's specimen, 92) to the promontory of the sacrum, but most commonly corresponding to the second lumbar vertebra. In most cases the aorta, greatly diminished in size, proceeded downwards into the greatly deformed pelvis and gave off two iliacs, which, however, showed no hypogastric or vesical branches. The single artery of the cord usually passed directly towards the anterior abdominal wall in the middle line, carrying the peritoneum with it, and then turned upwards to the umbilicus. When further details were given it was generally stated that the cœliac axis and superior mesenteric artery were present, while the inferior mesenteric artery was absent. In a few instances the artery of the umbilical cord was described as arising from one of the terminal branches of the aorta, and in such cases it is probable that it was truly a hypogastric, especially

[1] These were Boerhaave (11, 12), Rossi (15), Sachsse (16), Otto (18), Majer (24), Vildieu (31), Koehler (34), G. P. J. Wolff (42), Otto (44, 47), Pasanisi (50), Vrolik (56), F. Wolff (61), Jackson (70), Solger (73), Kidd (77), Gebhard (88, 89), Labougle and Régnier (92), Ruge (95), Odisio (96), Peters (97), Arnold (110), Clauss (113).

since we find that there coexisted with it a rudimentary urinary bladder (Graetz, 83). In other cases (*e.g.* Otto, 18; Majer, 24) the hypogastric arteries were present, but the artery of the cord was not continuous with either of them, and it is particularly significant that in these instances there was a trace of a urinary bladder, an organ almost invariably absent in sympodial fœtuses. It is unfortunate that in practically all the recorded cases it is simply stated that the single umbilical vein passed in its usual way to the liver, but in one at least of the accompanying illustrations (Boerhaave, 11) there is an indication that it entered the liver in the manner described in my specimen.

The evidence, therefore, from a study of the intra-abdominal arrangement of the vessels of the cord in cases of sympodia, is to my mind very strongly in favour of the idea of a vitelline placenta. Not only were the hypogastric arteries commonly absent, but when they did occur they were not continuous with the artery of the umbilical cord, and only passed to the rudimentary urinary bladder. On the other hand, the artery of the cord came off from the aorta in just such a way and in such a position as would be expected if it were truly a persistent omphalo-mesaraic or vitelline artery.

In order still further to strengthen this view I may give the results of an inquiry into the state of the bladder and urachus (the allantoic derivatives) in these 110 sympodial fœtuses. In fifty-two instances there was information regarding at least the urinary bladder, and in forty[1] of these it was clearly stated that this viscus was entirely absent. Reference was seldom made to the urachus, but when it was made it was simply the note that it was wanting. In the remaining twelve specimens[2] there was a more or less complete account of a sac, which the authors, at any rate, regarded as of the nature of a urinary bladder. In Sue's specimen (9) the sac was common to the narrow terminal rectal tube and to the vagina, into which two uteri opened; in Otto's (18) there was a small bladder and the trace of a urethra, but no kidneys or ureters; in Sacchero's (33) there was a bladder (?) which opened by a pervious urachus at the umbilicus. G. P. J. Wolff (42), in describing his case, said there was a cloacal sac, perhaps consisting of a small bladder and a thin urachus; Vrolik (56) referred to a small sac coming off from the sigmoid flexure and continued into the umbilical cord by the urachus; and Orsolato (60) mentioned a good-sized bladder cavity, opening, however, posteriorly in the sacral region, by a capillary aperture. In Förster's specimen (65) there was a rudimentary blind bladder; in Julliard's (69) it was also small and had no orifices, and the

[1] These were the cases numbered in the bibliography as follows:—5, 11, 13, 14, 15, 16, 19, 21, 24, 25, 31, 32, 34, 41, 43, 44, 45, 47, 50, 51, 52, 57, 59 61, 62, 64, 67, 70, 72, 88, 91, 92, 93, 95, 96, 97, 108, 109, 110, and 113.

[2] These were the cases 9, 18, 33, 42, 56, 60, 65, 69, 73, 77, 83, and 89.

urachus was normal; and such were, roughly speaking, the conditions in the cases of Solger (73), Kidd (77), and Graetz (83). It is therefore perfectly clear that in this form of monstrosity the urinary bladder and urachus are nearly always absent, and that in the few exceptions in which they are present they are rudimentary in a marked degree. Further, it is to be borne in mind that it was exactly in the cases which showed a rudimentary bladder that the hypogastric arteries existed apart from the single artery of the cord. Both the frequent absence of the bladder, therefore, and its occasional presence in a rudimentary form, are arguments in favour of the vitelline origin of the funic artery in most of these cases of sympodia.

But, it may be asked, if the vessels in the cord are vitelline in origin and not allantoic, ought there not to exist alongside of them some trace of the umbilical vesicle or its stalk? I do not at all admit that this reasoning is correct, for whilst the allantoidal vessels persist till the full term, it is rare to find a remnant of the allantois in the umbilical cord. It is true, however, that the urachus and bladder represent it in the abdomen; and it is therefore reasonable enough to inquire whether any trace of the umbilical vesicle may be found in the abdominal cavity in sympodia. In 15 out of the 110 cases, I have been able to obtain some evidence upon this point. In three instances there was the description of the passage of a blind tube from the small intestine to the umbilicus; these were the cases of Otto (44), Langsdorff (52), and Hempel (72). It is reasonable enough to look upon this intestinal protrusion as a remnant of the omphalo-mesenteric duct, as a Meckel's diverticulum. More valuable facts, however, were those reported by Otto (45), Pasanisi (50), Dalkowski (59), and Cosentino (108); for they found in the sympodial fœtuses described by them that there was also exomphalos. The anterior abdominal wall was defective to a greater or less degree, and there was protrusion of intestinal coils and sometimes also of liver, stomach, etc. In Bardinet's specimen (40) there was a hernial protrusion in the lumbar region; and in the cases described by Hartmann (5), Gigli (14), Behn (25), Sacchero (33), and Odisio (96), there passed a cord-like structure from the blindly ending intestine to the neighbourhood of the umbilical ring.

In order to obtain from the literature of sympodia every piece of evidence bearing upon the question under consideration, it may finally be stated that in practically all the cases in which there is any record of a dissection it is definitely stated that the lower end of the large intestine was either quite absent or was represented only by a shrivelled cord. In only one or two doubtful cases was there even the trace of a patulous anus, and in them the large intestine was markedly defective higher up.

I think, therefore, it is clear that the records of the anatomy of

sympodial fœtuses fully prove: (1) the common absence of allantoic derivatives (bladder, urachus, and hypogastric arteries); (2) the common presence of vitelline derivatives (omphalo-mesenteric artery, vitelline duct); and (3) the constant absence of the structure from which the allantois arises (the lower part of the large intestine). In these respects the fœtus described by me was in full accord with the majority of the recorded cases. The conclusions, therefore, which I formed from its study are fully supported by the larger investigation of the subject rendered possible by the work of others. The fœtal placenta, then, in sympodial fœtuses must be looked upon as deriving its vessels from the umbilical vesicle instead of from the allantois. It is, in fact, a vitelline placenta.

Before passing to the consideration of references by other writers who have been struck by this peculiarity in the placental formation in sympodia, it may be well for me to attempt an answer to my second question. This, it will be remembered, was whether there is anything in the current theories of origin of sympodia to support the idea of the occurrence of a vitelline placenta—whether, in other words, the teratogenesis of sympodia will throw any light upon the absence of the allantois and the presence of the vessels of the umbilical vesicle.

2. *The Causation of Sympodia and the Formation of the Placenta.*

In order to explain at all satisfactorily the peculiar combination of malformations met with in sympodia (the rotation from within outwards and from before backwards of the lower limbs, and their more or less complete fusion), it is necessary to imagine the action of some force upon the posterior extremity of the embryo. This force, which must operate at a very early period of development, and which must be practically continuous, is at the present time generally believed to be of the nature of pressure from non-development of the amnion over the caudal end of the embryo. According to Dareste (117), who has met with several cases of sympodia in process of evolution in the chick, there is an arrest in the development of the caudal fold ('capuchon caudal') of the amnion. The membrane does not form a fold below the posterior extremity of the embryo, but remains applied to it. The limb buds, instead of descending from the sides of the trunk, are thus turned backwards and come to lie over the back of the embryo; they come into contact by their external borders, which have now become internal; and if the pressure continue they unite together and form a single lower limb containing more or less marked traces of its original double character. Dareste refers to the absence of the bladder in sympodia, but does not attempt to explain it, and concerning the placenta he simply appeals to obstetricians for information regarding it. Now it seems to me

PLATE III.

Placenta with persistent Umbilical Vesicle (*a*), and Omphalo-mesenteric Vessels (*b*, *b*, *b*, *b*).
(Reduced by about one-third.)

that it is a very fair working hypothesis to conclude that the non-development of the amnion which brings pressure to bear upon the posterior end of the embryo, must necessarily influence also the allantoic projection (or 'Bauchstiel') which springs therefrom. The pressure may even be so great as to prevent the formation of the posterior part of the bowel from which the allantois springs, and if both these parts have their development arrested it is easy to understand the absence of the bladder and urachus. On the other hand, the umbilical vesicle will be outside the pressure sphere or may be formed before the amnion begins to exert its compressing force and so remains intact. Its vessels also, at least one pair, will escape, and there seems no room for any explanation other than that they must pass to the chorion and vascularise its villi in the future placental site.

The objection that the omphalo-mesenteric vessels may not be able to persist till the full term may be fully met by the specimen of which I now show a drawing. It represents a placenta and cord from an outwardly normal infant born in the Edinburgh Maternity Hospital some years ago, and it shows persistent omphalo-mesenteric vessels (Plate iii., *b b b b*) in the cord, which can be easily traced to the remnant of the umbilical vesicle (*a*) on the fœtal surface of the after-birth. The allantoidal vessels were also present in this case. I do not affirm that in this case the chorion was vascularised by the vitelline vessels, although I think it may well have been so to begin with, but I do hold that it proves that they may be found in a functional state at the full term, and that they may grow in length *pari passu* with the umbilical cord.

It seems, therefore, that if the current theory of the teratogenesis of sympodia be accepted, it must be reckoned as forming yet another argument in favour of the vitelline origin of the fœtal placenta in such monstrosities.

The occurrence of a vitelline placenta in sympodial fœtuses has not, however, remained unsuspected up till now, although I may say that I was unaware of this fact at the time when I examined my specimen and formed my views regarding it. In 1880 Colomiatti (118), in his *Frammenti di embriologia patologica*, a work little known in this country, as a result of the study of various monstrosities (none of which was a sympodial fœtus), came to the conclusion that when one artery only was found in the umbilical cord it might be truly umbilical (*i.e.*, allantoidal), but it might also be omphalo-mesenteric. In the latter case there is usually absence of the bladder, urethra, and lower part of the intestine, and the vascular part of the fœtal placenta is not formed from the allantois, but from the umbilical vesicle ('e la parte vascolare della placenta fetale non è fatta dall' allantoide ma della vescicola ombelicale'). Colomiatti also applied this conclusion to the placenta in a case of sympodia which had been reported by Calori. In 1886 Weigert

(119), evidently in ignorance of Colomiatti's paper, drew somewhat similar conclusions from the study of cases of single 'umbilical' artery. He described the origin of the vessel from the aorta, and regarded it as a persistent omphalo-mesenteric artery; but he does not seem to have grasped the full import of his observation, for he simply stated that this vessel therefore carried the blood to the cord and placenta. The new light which might thus be thrown upon the development of the placenta seems not to have been evident to Weigert. Labougle and Régnier (92), however, grasped the situation much more fully. In their communication, published in 1889, they very completely described a sympodial monstrosity, and came to the conclusion that there was in it total absence of the allantois and its derivatives. How, then, they asked themselves, was the placenta formed? After a reference to the vitelline placenta of the marsupials, as demonstrated by Owen, Balfour, and Osborn, Labougle and Régnier hazarded the hypothesis that possibly in their sympodial fœtus the umbilical vesicle may have taken on the functions of the non-existent allantois. They were careful, however, to emphasise the hypothetical nature of the suggestion, and to confess that absolute proof was not forthcoming. Finally, Arnold (110), in 1894, alluded to the views of Weigert and Labougle and Régnier, but without expressing a personal opinion thereupon.

3. *The Occurrence of a Vitelline Placenta in other Terata than the Sympodial.*

To my third question (Are there any other forms of monstrosity in which a vitelline placenta seems to occur?) I cannot here give a full answer. That I must reserve for a separate communication. I may, however, indicate that I hope to show that in many forms of terata (and even in fœtuses not externally monstrous) in which the umbilical cord contains an anomalous number of vessels, and in which the bladder and the lower end of the intestine are absent, there is good reason to believe that the vascular part of the fœtal placenta owes its origin to the vitelline and not to the allantoic circulation. In exomphalos, also, where often no cord is formed, and the vessels pass directly from the abdomen to the placenta, the latter in all probability is vitelline. In the well-known placental parasites (acardiac, acormic, amorphous, etc.) the development of a vitelline placenta by one twin, and of an allantoic by the other, may suffice to explain the retarded evolution of the former and its apparent defeat in what may be called the struggle for intra-uterine life. At the full time the single after-birth may consist of two parts, one vitelline in origin or omphaloidean, the other allantoic or allantoidean; the former is connected with the aorta of the parasite by the mesenteric artery, and the latter with the terminal branches of the aorta of the normal twin by the

umbilical arteries, while the two placental circulations are connected together by a sort of third circulation. Manifestly this matter deserves fuller study than I can give it here.

4. *Comparative Embryology of the Placenta.*

Recent years have witnessed many important contributions to the study of the comparative embryology of the placenta. It cannot, however, be said that our knowledge of the subject is yet complete; rather it may be stated that the matter is in a transition stage, for whilst many of the views of the past have had their foundation seriously undermined, the new hypotheses which have been built up can scarcely be looked upon as securely established. Just as the investigations of Hubrecht dealing with the placenta of the hedgehog (120) have resulted in a re-adjustment of many of our ideas regarding the mammalian placenta in general, so special researches into the development of that organ in another type may cause us again to modify the notions that are current.

Most of the orders of the Mammalia are characterised by the presence of a placenta during fœtal life; in fact, the possession of this organ is the distinguishing feature of the sub-class Eutheria or Monodelphia, sometimes, indeed, called on this account Placentalia. Of the ten orders into which the placental mammals have been divided, seven have been generally recognised as possessing a fœtal placenta with vessels derived entirely from the allantois, while three have been noted as showing a preliminary placenta supplied by vitelline vessels afterwards replaced by a permanent one with allantoic vessels. With regard to the seven orders with what may be termed for the sake of brevity an allantoic placenta, in two (Sirenia and Carnivora) the placenta is zonary in form; in two (Cetacea and Lemuroidea) it is diffuse; in one (Ungulata) it may be cotyledonary (as in the Ruminants), or zonary (as in the Elephants and Hyracoidea), or diffuse (as in Perissodactyla and some Artiodactyla); in one (Edentata) it may be diffuse (as in the Manidae or Pangolins), zonary (as in the Orycteropidae or Aard-varks), or discoidal (as in the Sloths, Ant-Eaters, and Armadillos); while in one (Anthropoidea) it is constantly meta-discoidal in form. The three orders in which the allantoic placenta is preceded by a temporary vitelline placenta (Rodentia, Insectivora, and Chiroptera) agree in the form of the organ which is discoidal. If, therefore, the five orders with a meta-discoidal or a discoidal placenta be grouped together — Anthropoidea, most Edentata, Rodentia, Insectivora, and Chiroptera—it becomes evident that three of them have been shown to be provided with a temporary vitelline placenta, while the two remaining orders in which this has not been demonstrated are the Anthropoidea (including Homo) and most of the Edentata. I hesitate to use similarity in the form

of the placenta in these groups as an argument in favour of the future demonstration of a temporary vitelline placenta in the Anthropoidea and in most of the Edentata; bnt in view of the facts stated in this paper the coincidence is at anyrate noteworthy. It will be well, therefore, to remember that three out of the four orders which resemble the human subject in the possession of a discoidal placenta have been shown to possess a preliminary vitelline placenta. Further, these five orders resemble each other in the deciduate or caducous character of the placenta. These facts may be stated in tabular form as follows:—

MAMMALIA PLACENTALIA.

Deciduate type.	Discoidal Placenta.	Rodentia. Insectivora. Chiroptera. Anthropoidea. Edentata (with exceptions).	Vitelline-allantoic Placenta.
	Zonary Placenta.	Carnivora. Sirenia. Ungulata (Hydracoidea and Proboscidea). Edentata (Orycteropus and Dasypus).	Allantoic Placenta.
Indeciduate type.	Cotyledonary Placenta.	Ungulata (Ruminants).	
	Diffuse Placenta.	Cetacea. Lemuroidea. Ungulata (most). Edentata (Manis).	

In the placental Mammals that have been found to possess a vitelline placenta, that structure is temporary in character and preliminary to the formation of the allantoic organ. Among the Rodentia, the placenta of the rabbit has recently been fully investigated by Duval (121), Minot (122), and others; while those of the hedgehog and the shrew, among the Insectivora, have been the subject of special study by Hubrecht (120). It may be well to consider shortly the account which the latter author gives of the vitelline-allantoic placenta of the hedgehog.

At an early stage the embryonic sac or blastocyst of *Erinaceus* consists of an outer epiblastic wall (called by Hubrecht, *trophoblast*) and an inner aggregation of hypoblast cells, first forming a solid mass, and, later, a sac which becomes in part the lining of the primitive gut and in part the umbilical vesicle—the two being connected by the vitelline duct. Part of the epiblast becomes the embryonic disc. Then the mesoblast appears and divides into an outer or somatic layer and an inner or splanchnic, with a cavity be-

tween (the incipient body cavity). The former of these layers (the somatopleure) forms a double fold which, along with a single sheet of epiblast, rises up over the embryo to constitute, by the union of its inner layers, the amnion. The outer layers of this somatic mesoblast form, by their union, the subzonal membrane of Turner, and fuse with the epiblastic wall (the trophoblast) to constitute the diplo-trophoblast of Hubrecht. The splanchnic layer of the mesoblast (the splanchnopleure), on the other hand, grows round the umbilical vesicle (a hypoblastic structure). The wall of the umbilical vesicle along with its mesoblastic covering then unites with the subzonal membrane, which in its turn is connected (by villous processes) with the epiblastic covering. In other words, the umbilical vesicle and its mesoblastic covering unite with the diplo-trophoblast to form the vitelline placenta, or, as Hubrecht calls it, the omphaloidean diplo-trophoblast. The fœtal circulation in this placenta is of course that of the umbilical vesicle. This, however, is a temporary arrangement, for, as a result of the growth of the amnion and fœtus, the villiferous umbilical vesicle is detached ('peeled out') from the diplo-trophoblast. At the same time, the allantois (hypoblastic internally, mesoblastic externally) grows out and becomes fused with the diplo-trophoblast (conjoined subzonal membrane and epiblast) to form the permanent fœtal part of the placenta or the allantoidean diplo-trophoblast. This new placenta, vascularised by the allantoic vessels, gradually replaces the vitelline or omphaloidean placenta. In a more recent memoir, Hubrecht (123) has shown that in another of the Insectivora (Sorex, the Shrew) there is an allantoic and an omphaloidean trophoblast, but the latter does not go on to the development of villi, and cannot therefore be said to form even a temporary vitelline placenta. The wall of the umbilical vesicle separates from the corresponding trophoblast before vascular union with it can take place. In Pteropus edulis, among the Chiroptera, there is not, according to R. Göhre (124), any vitelline placenta.

Such is, shortly, the state of matters in the hedgehog, and it may be asked whether we may conclude that in the case of the sympodial human fœtus the placenta is formed in the same way as the vitelline or omphaloidean placenta in Erinaceus. Is the sympodial placenta, in fact, the temporary vitelline placenta of the hedgehog become a permanent structure in the human subject?

Before I give a definite answer to this question, a glance must be given to the mode of vascular union of mother and fœtus in non-placental mammals and in animals yet lower in the scale. During the very short gestation period in Marsupials there is certainly no formation of an allantoic placenta, but the large yolk-sac adheres to, and in some instances is united by non-vascular villi to, the subzonal membrane. Further, in the case of the opossum (125) and kangaroo-rat (126), as pointed out by Selenka, the allantois is small and lies in a pouch or notch of the

yolk-sac, so shut in that it never reaches the subzonal membrane at all. In the opossum, the single omphalo-mesenteric artery runs in a curious fashion round the bottom of the pouch or pocket to reach the area vasculosa. In the Marsupialia, therefore, although no true placenta is formed, the organ which absorbs nourishment for the fœtus from the mother, before the former is transferred to the marsupium, is not the allantois, but the umbilical vesicle.

In the Sauropsida, in which, as in the Mammalia, an allantois is present, no true placenta is formed, one or two instances are met with in which the vascular yolk-sac absorbs nourishment from the wall of the uterus although separated by a porous and rudimentary egg-shell. This arrangement holds with Trochydosaurus and Cyclodus among the Lacertilia. Below the Sauropsida the only possible indication of a vascular union between mother and fœtus must of necessity be vitelline, for there is no allantois. Among the Elasmobranch fishes, and precisely in some species of Mustelus and Charcharias, there is a placenta-like connection between the yolk-sac and the wall of the uterus; while among the Teleostean or 'bony fishes' Anableps shows a yolk-sac with absorbing processes resembling villi.

In the case of the sympodial fœtus which has furnished the groundwork of this communication, the fœtal placenta was apparently entirely vascularised by vitelline vessels. It may, therefore, and on this account, be asked whether its placenta was not more closely allied to the yolk-sac connection of some Lizards and a few cartilaginous and bony fishes than to the temporary vitelline placenta of the hedgehog and rodents. On the whole I am inclined to regard the placenta in sympodia (and also in some other forms of monstrosity) as having more affinity with the provisional and preliminary vitelline organ in Insectivora and Rodentia than with the very rudimentary suggestions of a placenta formed by the yolk-sac of a few types among the Sauropsida and Ichthyopsida. From the standpoint of Teratology there is nothing inherently improbable in the occurrence in a persistent form in the human subject of a structure which exists as a temporary organ in one of the lower animals. The records of Embryology and Teratology contain several instances of this. I regard it as more than probable that sooner or later a case will be put on record in which one of the rodents or insectivores will be found, through defect in the growth of the allantois, to have developed an entirely vitelline or omphaloidean placenta. With a placenta so developed, the after-birth of the sympodial fœtus would have the closest affinity.

5. *Recent Views on the Formation of the Human Placenta.*

In answering the fifth of the questions stated near the beginning of this paper, I have to admit that recent researches on the development of the human placenta have revealed little or nothing

in support of a belief in even the occasional occurrence of an after-birth vascularised from the fœtal side by the vitelline vessels. Hubrecht (120), fresh from the study of the vitelline placenta of Erinaceus, says: 'Only in the human chorion there is homogeneity between the way in which every part of its surface is vascularised, it being only the umbilical, and never the vitelline vessels which supply it.' T. W. Eden (127), however, is not quite so emphatic, for he writes: 'It may be that the vitelline placenta of the hedge-hog has no homologue in the human ovum, but Hubrecht's observations are, at least, highly suggestive.'

There is, however, one series of observations, those of W. His (128), which, while they do not prove anything directly in favour of the occurrence of a vitelline placenta in the human subject, certainly tend to weaken the belief in the paramount importance of the allantois. He believes that before the outgrowth of the allantois has taken place the embryo is already united to its envelopes by a bridge of mesoblastic tissue, the 'ventral stalk' or 'Bauchstiel'; along it allantoic vessels grow out to reach the chorion and the short allantois comes to lie in contact with it; manifestly if the bridge of tissue precede the allantois and its vessels, it is easier to conceive how in the absence of the allantoic structures the vitelline vessels may pass in the ventral stalk to vascularise the chorion. Minot and others have brought forward evidence which also goes to prove that in the human embryo the allantois is not met with as a free vesicle. It must be noted, however, that Minot is not an advocate of the notion of a vitelline human placenta, for he says definitely (129): 'I am unable to recognise any reason for connecting the evolution of the placenta with the yolk-sac or vitelline circulation.' The tendency of late has been to regard the human placenta more as the organ of the chorion and less as the organ of the allantois. The examination of human embryos younger than any yet described may reveal a primitive vitelline vascularisation, but as yet human embryology is barren of any such demonstration; it is only from the study of certain forms of monstrosity that a hint has been obtained of its possibility.

General Conclusions.

1. In the sympodial fœtus it is common to find in association with a functionally adequate placenta the absence of allantoic derivatives and vessels, and of the structure from which the allantois itself is derived, and the presence of vessels (usually an artery and a vein) in the umbilical cord which appear to be the persistent omphalo-mesenteric or vitelline vessels.

2. It may therefore be regarded as probable that the fœtal part of the placenta has in these cases been vascularised by the vitelline instead of the allantoic circulation.

3. This conclusion is supported by the following additional evidence:—

(*a*) The commonly accepted theory of origin of sympodia is pressure (probably amniotic in nature) acting upon the tail end of the embryo and causing defective development of the parts situated there, including, of course, the allantois and its vessels; in this fact may lie the explanation of the absence of the allantoic derivatives.

(*b*) The omphalo-mesenteric vessels may persist (alongside of the allantoic) till the full term of pregnancy, keeping pace with the normal growth of the umbilical cord, and may then be found to contain blood, showing that they are still functionally active.

(*c*) In other forms of monstrosity (*e.g.*, exomphalos, placental parasitism, etc.), there is evidence of the development of the placenta by means of vitelline vessels.

(*d*) In three of the orders of placental Mammalia, which resemble the human subject in the possession of a discoid placenta (viz., Rodentia, Chiroptera, and Insectivora), there is absolute proof of the normal occurrence of a temporary and provisional vitelline or yolk-sac placenta replaced later by an allantoic one: in animals below the placental mammals there is some evidence of the absorption of nourishment from the mother by means of a rudimentary vitelline pseudo-placenta.

(*e*) Recent researches in human Embryology have tended to show that the fœtal placenta is not so exclusively 'the organ of the allantois' as was at one time supposed; it may also be that the allantoic vessels are not absolutely necessary for its vascularisation.

4. The vitelline placenta in sympodial fœtuses (and in some other forms of terata) may represent a reversion to the type of placenta-formation in the hedgehog, or even to that of pseudo-placenta in the Marsupials and others still lower in the scale. In this case an arrangement temporary in character in the animal has become permanent in the malformed human fœtus. On the other hand, it may yet be shown that early human embryos possess normally a preliminary union between vitelline vessels and omphaloidean trophoblast, in which case the vitelline placenta of sympodia is an arrest of development—a condition normally temporary in the human subject has become permanent in the same.

LITERATURE.

(*a*) *Cases of Sympodia.*

1. ROCHEUS (N.).—*De morbis mulierum curandis*; Paris, 1542. (This case is quoted by Schenkius (J.) in his *Observationum medicarum, rararum, novarum, admirabilium, et monstrosarum volumen*, Lib. v., *De pede integro*, p. 737, Francofurti, 1609.)

2. FINCELIUS (J.).—*De miraculis sui temporis*, Francofurti, 1556-7. (This case is quoted by Lycosthenes (C.) in his *Prodigiorum ac Ostentorum chronicon*, p. 623, 1557; by Licetus, Schenkius, and Aldrovandi.)
3. ALDROVANDI (U.)—*Monstrorum historia*, cap. vi., *De vitiata pedum conformatione*, p. 519, Bononiae, 1642.
4. SCULTETUS (J.). — *Armamentarium chirurgicum*, p. 172, Hagae-Comitum, 1656. Not illustrated.
5. HARTMANN (P. J.).—'Anatome Monstri,' *Miscellanea curiosa sive Ephemeridum*, Dec. ii., Ann. x., Obs. 162, p. 258, 1692. Illustrated.
6. DU CAUROI.—Letter in *Le Journal des Sçavans*, xxiv. (for 1696), p. 81. 2nd Edit. Amsterdam, 1709.
7. HOTTINGER (J. H.).—'De monstruo humano absque sexu, pedibus, etc., in excrescentiam caudiformem desinente,' *Miscellanea curiosa*, Dec. iii., Ann. 9-10, Obs. 233, p. 413, 1706. Illustrated.
8. SUPERVILLE (D. DE).—'Some Reflections on Generation and on Monsters, with a description of some particular Monsters,' *Philos. Trans. of Roy. Soc. of London*, xli., No. 456, p. 302. London, 1744.
9. SUE (J. J.)—*Histoire de l'Acad. Roy. des Sciences*, lxiv., p. 42, for 1746. Paris, 1751.
10. BASTER (J.).—'Descriptio fœtus monstrosi sine ullo sexus signo,' *Philos. Trans. of Roy. Soc. of London*, xlvi, No. 495, p. 479. London, 1752. Illustrated.
11. BOERHAAVE (A. K.)—*Hist. anat. infantis cujus pars corporis inferior monstrosa*. Petropoli, 1754. Illustrated.
12. BOERHAAVE (A. K.)—*Hist. altera anat. infantis cujus pars corporis inferior monstrosa*. Petropoli, 1757. Illustrated.
13. HOFER (J.)—'Observatio monstri humani,' *Act. Helvet physico-mathemat.-anatom.-medicis*, iii., p. 366. Basileae, 1758.
14. GIGLI (E.)—*Avvisi sopra la salute umana* di G. Targioni, ii., p. 106. Firenze, 1776. Quoted by Taruffi (vii., p. 510).
15. ROSSI (F. I. A.).—*Descript. fœtus monstrosi Holmiae nati*. Diss. inaug. Jenæ, 1800. Illustrated.
16. SACHSSE (C. D.).—*Descriptio Infantis monstrosae*. Diss. inaug. Lipsiae, 1803. Illustrated.
17. WALTER (J. .G).—*Museum anatomicum Berolini*, i., p. 122, No. 816, 1805.
18. OTTO (A. G.)—*Monstrorum sex humanorum anat. et physiol. disquisitio*, 4, p. 33, Francofurti, 1811; also in his *Monstrorum sexcentorum descriptio anatomica*, Obs. cclx., p. 153. Vratislaviae, 1841.
18A. BLUMENBACH (J. F.)—*De anomalis vitiosis quibusdam nisus formativi aberrationibus*, p. 7. Gottingae, 1813.

19-20-21. DIECKERHOFF (F. H. C.).—*De Monopodia.* Diss. inaug. Halae, 1819. Illustrated.

22. RIBKE (C. H.)—Verzeichniss einer *Sammlung anatomischer Praeparate.* Berlin, 1819. Quoted by Kœhler, Jena, 1831, and by others.

23. MECKEL (J. F.).—'Ueber die Verschmelzungsbildungen.' *Arch. f. Anat. u. Physiol.*, i., p. 272. Leipzig, 1826.

24. MAJER (F. T.).—*De fœtu humano monopodio.* Diss. inaug. Tubingae, 1827.

25-29 BEHN (H. J.)—*De monopodibus.* Diss. inaug. Berolini. 1827. Illustrated.

30. CRUVEILHIER (J.)—'Note sur un cas de monopodie,' *Bull. de la Soc. anat. de Paris*, 1827, 2nd Edit., ii., p. 205, 1844; also in *Journ. de Progrès et instit. méd.*, viii., p. 254, 1827; also in *Journ. de Médecine*, i., p. 365, 1827.

31. VILDIEU and DESCHAMPS.—'Observation d'un fœtus monstrueux," *Bull. des sciences médicales*, xvi., p. 385. Paris, 1829.

32. GOYRAND (G.)—'Fœtus monstrueux,' *Archives gén. de Médecine*, xxii., p. 234, 1830.

33. SACCHERO (G).—'Descrizione d'un neonato mostruoso,' *Ann. univers. di Med.*, lv., p. 95, Milano, 1830; also in *Bull. des sc. méd.*, xxii., p. 206. Paris, 1830.

34. KOEHLER (E.)—*Descript. monstri humani monopodis, adjectis nonnullis de monopodia animadversionibus.* Diss. inaug. Jenae, 1831. Illustrated.

35. LEVY (M. M.).—*De sympodia, seu monstrositate sireniformi, cum anatomica ejusmodi monstri descriptione.* Diss. Havniae, 1833.

36. RODATI (L.).—'De fœtu mostroso," *Novi commentari Acad. Scientiarum Instituti Bononiensis*, i., p. 32, 1834. Illustrated. Quoted by Taruffi (vii., p. 520.)

37-38-39. SAINT HILAIRE (I. G.).—*Des Anomalies*, etc., ii., p. 241, 1836. Illustrated (Atlas, Pl. v., figs. 2 and 3).

40. BARDINET (A.).—'Observations teratologiques, i. Sirenomèle,' *Bull. de la Soc. Anat. de Paris*, xiii., p. 196, 1838; also in Cruveilhier's *Anat. path.* ii., Liv. 33, Pl. v., figs. 1 to 6, 1835-42.

41. CRUVEILHIER (J.)—*Anatomie pathologique*, ii., Liv. 40, Pl. vi., figs. 1 to 8, 1835-42.

42. WOLFF (G. P. J.).—*Specimen anatomico-pathologicum de monstris sireniformibus.* Amstelodami, 1839.

43. HUESKER (B. W.)—*De vitiis syngeneticis adjecta monstri sireniformis descriptione*, p. 31. Diss. inaug. Gryphiae, 1841.

44-47. OTTO (A. G.) — *Monstrorum sexcentorum descriptio anatomica*, pp. 155-159, Obs. 262, 263, 264, and 265. Vratislaviae, 1841. Illustrated.

48. STEIN.—'Ein sirenenartige Missgeburt von chinesischen Eltern,' *Neue Zeitschr. f. Geburtskunde*, x., p. 338, 1841.
49. CORTESE (F.).—'Sopra alcuni casi di anomalie di sviluppo,' *Memorie della medicina contemporanea*, viii., p. 22. Venezia, 1842.
50. PASANISI (N.).—'Di un feto mostruoso,' *Annali degli aspiranti naturalisti*, i., p. 92. Napoli, 1843.
51. DUNN (R.).—'Case of monstrosity,' *Lancet*, i., for 1844, p. 152.
52. LANGSDORFF (C. G.).—*De sympodia. Diss. sistens descriptionem anatomicam infantis parte inferiore monstruosi.* Heidelbergae, 1846. Illustrated.
53. GADDI (P.).—'Cenni sopra tre mostri della specie umana,' *L'Educatore storico.* Modena, 1847. Illustrated. Quoted by Taruffi (vii., p. 514).
54. VROLIK (W.).—*Tabulae ad illustrandam*, etc., Pl. lxiv., fig. 6. Amsterdam, 1849. (Hovius' specimen.)
55. VROLIK (W.).—*Tabulae ad illustrandam*, etc. Pl. lxv., figs. 1 and 2. Amsterdam, 1849. (Baart de la Faille's specimen.)
56. VROLIK (W.).—*Tabulae ad illustrandam*, etc. Pl. lxv., figs. 3 and 4; Pl. lxvi., figs. 1 to 5; and Pl. lxvii., figs. 1 to 4. Amsterdam, 1849. (Suerman's specimen.)
57. EHRMANN (C. H.).—*Description de deux fœtus monstres dont l'un acéphale et l'autre monopode. Musée d'Anatomie de la Faculté de Méd. de Strasbourg*, p. 5, 1852. Illustrated.
58. GERRARD (J.).—'Unusual Fœtal Deformity; Retention of Placenta,' *Monthly Journ. Med. Sc.*, Lond. and Edin., xx., p. 348, 1855.
59. DALKOWSKI (E. J.).—*De monopodia.* Diss. inaug. Regimonti Pr., 1855. Illustrated.
60. ORSOLATO (G.).—'Storia e descrizione anatomica d'un mostro umano appartenente alle Sirene,' *Rivista periodica dei lavori della Imp. R. Accademia di Padova*, iii., p. 141. Padova, 1855.
61. WOLFF (F.). — *De sympodia.* Diss. inaug. Dorparti Livonorum, 1856. Illustrated.
62. MILROY (D.).—'Case of Human Monstrosity,' *Edin. Med. Journ.*, iv., p. 1098, 1859. Illustrated.
63. CALORI (L.).—'Sopra un sirenomelo,' *Memorie dell' Accademia delle Scienze di Bologna*, 1st ser., x., p. 143, 1859.
64. MEADOWS (A.).—'Case of Monstrosity,' *Trans. Lon. Obst. Soc.*, iv., p. 255, 1863. Illustrated.
65. FORSTER (A.).—*Die Missbildungen des Menschen*, 2nd Edit., p. 66, 1865. Illustrated (Pl. x., fig. 2).
66. MARDUEL.—'Un monstre symélien uromèle,' *Ann. Soc. de Méd. de Lyon*, 2nd ser., xvi., pt. 2, p. 27, 1868.

67. MEADOWS (A.) and BANNISTER (A. J.).—'Specimen of Monstrosity,' *Trans. Lond. Obst. Soc.*, ix., p. 112, 1868. Illustrated.

68. BOULLAND (C.)—'Observation d'un monstre symélien affecté d'arrêt de développement des membres supérieurs et de plusieurs autres organes,' *Bull. Soc. de méd. et pharm. de la Haute Vienne*, p. 314. Limoges, 1868.

69. JULLIARD (G.).—'Mémoire sur un monstre appartenant à la famille des syméliens, et sur les causes de la symélie.' *Comptes rendus des séances et mémoires lus à la Soc. de Biol.*, 4th ser., v., pt. 2, p, 63. Paris, 1869.

70. JACKSON (J. B. S.).—'Siren Fœtus,' *Boston Med. and Surg. Journ.*, lxxx., p. 33, 1869.

71. PETIT.—'Description et dissection d'un monstre uromèle,' *Bull. méd. du Nord.*, x., p. 337. Lille, 1869.

72. HEMPEL (A.). — *Ueber Sirenenmissbildung.* Diss. inaug. Berlin, 1869.

73. SOLGER (B.).—*Ueber Sirenenbildung.* Diss. inaug. Wurzburg, 1871. Illustrated.

74. DEPAUL.—'Monstre uromèle,' *Bull. Soc. de Chir. de Paris*, 2nd ser., xii., p. 141, 1871-2.

75. CAZIN.—'Monstre symélien,' *Bull. de la Soc. anat. de Paris*, 5th ser., vi., p. 258, Paris, 1873. (Specimen shown by Houel.)

76. MACLAREN (W.).—'Case of siren-like malformed Fœtus at full time, with a well-formed penis on the posterior aspect of the body,' *Edin. Med. Journ.*, xviii., p. 658, 1873; and xix., p. 590, 1874. Illustrated.

77. KIDD.—'Monstrous Fœtus,' *Path. Soc. of Dublin*, March 6, 1875; *Brit. Med. Journ.*, i., for 1875, p. 361.

78. DUNCAN (J. M.).—'Siren Fœtus,' *Edin. Med. Journ.*, xxii., p. 841, 1877.

79. SANTI SIRENA.—Article 'Meloateleplasia,' in *Enciclopedia Medica*, 2nd ser., i., p. 475. Milano, 1878. Illustrated.

80. RAVERTY (G. A.).—'A case of Monstrosity,' *Brit. Med. Journ.*, i., for 1883, p. 1116. Illustrated.

81. TAYLOR (S. F.).—'A case of Monstrosity,' *New York Med. Journ.*, xxxvii., p. 260, 1883. Illustrated.

82. MORGAN (J. H.).—'Siren Monster,' *Trans. Path. Soc. Lond.*, xxxvii., p. 555, 1886.

83. GRAETZ (H.).—*Ueber zwei seltene Missbildungen.* Diss. inaug. Erlangen, p. 13, 1886.

84-85.—WEIGERT (C.). —'Zwei Fälle von Missbildung eines Ureter und einer Samenblase mit Bemerkungen über einfache Nabelarterien,' *Archiv f. path. Anat. u. Physiol.*, civ., p. 10, 1886.

86-87. REICHEL.—'Einige seltenere Präparate von Missgeburten,' *Centralbl. f. Gynäk*, xi., p. 110, 1887.

88-89. GEBHARD (C.).—*Sirenenbildung.* Berlin, 1887. Illustrated.
90. POUCELET.—'Enfant monstre symélien,' *Presse méd.*, No. 26, 1889.
91. SCHWING (C.).—'Eine Sirenenbildung bei einem Zwillungskinde,' *Centralbl. f. Gynäk.*, xiii., p. 484, 1889. Illustrated.
92. LABOUGLE (J.) and RÉGNIER (P. C.).—'Anatomie d'un fœtus symélien et considerations critiques sur la symélie,' *Annales de la Soc. de Gand*, lxix., p. 103, 1890; also, 'Etude anatomique d'un monstre symélien,' *Journ. de méd. de Bordeaux*, xviii., p. 438 and 458, 1888-9. Illustrated.
93. BENNINGTON (R. C.).—'Dissection of a symelian monster,' *Journ. of Anat. and Physiol.*, xxv., p. 202, 1890-1. Illustrated.
94. HIRST (B. C.) and PIERSOL (G. A.).—*Human Monstrosities*, i., p. 87, 1891. Illustrated (Pl. vii.).
95. RUGE (H.).—'Ein Fall von Sirenenbildung,' *Archiv f. path. Anat. u. Physiol.*, cxxix., p. 381, 1892. Illustrated.
96. ODISIO (L.).—'Studio anatomico ed istologico sopra un Sirenomele,' *Giorn. d. R. Accad. di Med. di Torino*, lv., p. 441, 1892. Illustrated.
97. PETERS (G. W.).—*Beschreibung eines Sympus apus.* Diss. inaug. Greifswald, 1892. Illustrated.
98-106. LOWNE (B. T.).—'Sympodia,' in *Descriptive Catalogue of the Teratological Series in the Museum of the Royal College of Surgeons of England*, 2nd edit., p. 81, 1893.
107. TARUFFI (C.).—*Storia della Teratologia*, vi., p. 527, 1891; and vii., p. 510, 1894. Illustrated.
108. COSENTINO (G.).—'Oligoidramnios e mostruosita fetale,' *Archivio di Ostet. e Ginecol.*, i., p. 41, 1894. Illustrated.
109. HENRY (J. P.).—'A Sexless Monster,'—*Brit. Med. Journ.*, i., for 1894, p. 1343.
110. ARNOLD (J.).—'Myelocyste, Transposition von Gewebskeimen und Sympodie,' *Beitr. zur path. Anat. und zur allg. Pathol.*, xvi., p. 1, 1894. Illustrated.
111. TEACHER (J. H.) and COATS (J.).—'A Specimen of the so-called Siren-malformation (Sympus, Symelia),' *Journ. of Path. and Bacter.*, iii., p. 149, 1895.
112. MANNERS-SMITH (T.).—'A description of two Symelian Monsters,' *Journ. of Anat. and Physiol.*, xxx., p. 169, 1896.
113. CLAUSS (L.).—'Ein Fall von Sirenenbildung.' Diss. inaug. Königsb. i. Pr., 1896. Illustrated.
114. MAYGRIER and COVILLE.—'Monstre symélien, *Bull. et mém. Soc. obst. et gynéc. de Par.*, pp. 98-104, 1897; also in *Journ. de méd. de Par.*, 2 s., ix., p. 211, 1897.
115. SPENCER (H.).—'Skiagram of a Sireniform Monster,' *Trans. Obst. Soc. Lond.* (1896), xxxviii., p. 118, 1897. Illustrated.
116. PINARD and VARNIER.—'Monstre syméle,' *Ann. de gynéc.*, xlviii., p. 146, Paris, 1897. Illustrated.

(*b*) *Additional References.*

117. DARESTE (C.).—*Production artificielle des monstruosités*, p. 420. Paris, 1891.
118. COLOMIATTI (V.).—*Frammenti di embriologia patologica*, p. 27. Torino, 1880.
119. WEIGERT (C.).—'Zwei Fälle von Missbildung eines Ureter und einer Samenblase mit Bemerkungen über einfache Nabelarterien,' *Arch. f. path. Anat. u. Physiol.*, civ. p. 10, 1886.
120. HUBRECHT (A. A. W.).—'The Placentation of Erinaceus Europæus,' *Quart. J. Micros. Sc.* N.S. xxx., 283-404, 1890.
121. DUVAL (M.).—*Le Placenta des Rongeurs.* Paris, 1892.
122. MINOT (C. S.).—'Uterus and Embryo,' *Journ. Morphol.*, ii., p. 341, 1889; 'Die Placenta des Kaninchens,' *Biol. Centralbl.*, x., p. 114, 1891.
123. HUBRECHT (A. A. W.).—'The Placentation of the Shrew (Sorex vulgaris, L.),' *Quart. J. Microsc. Sc.*, N.S. xxxv., 481-537, 1894.
124. GÖHRE (R.).—'Dottersack und Placenta des Kalong,' in *Selenka's Studien über Entwickelungsgeschichte der Tiere*, v., 2, p. 218, 1892.
125. SELENKA (E.).—'Das Opossum,' *Studien über Entwickelungsgeschichte der Tiere*, iv., 2, p. 135, 1887.
126. SELENKA (E.).—'Beutelfuchs und Känguruhratte (Phalangista et Hypsiprymnus),' *Ibid.*, v., 1, p. 179, 1891.
127. EDEN (T. W.).—'A Study of the Human Placenta, Physiological and Pathological,' *Journ. Path. and Bacteriol.*, iii., p. 449, 1896.
128. HIS (W.).—*Anatomie menschlicher Embryonen*, iii., p. 222, 1885.
129. MINOT (C. S.).—*Human Embryology*, p. 377, 1892.

Prof. Simpson agreed with Dr Milne Murray in regarding the communication as one of extreme value, whilst it would require for its discussion more consideration than could be afforded by simply hearing it read. It required, further, more familiarity with embryological research than most of them enjoyed. Whether or not Dr Ballantyne's conclusions could be established, it was quite certain that the omphalo-mesenteric vessels could remain pervious throughout pregnancy, and his paper would lead to more careful examination of the relations of the placental vascularisation in other varieties of fœtal malformation.

Dr D. Berry Hart gave it as his opinion that the placenta could not be called an organ of either the allantois or the umbilical vesicle, both of which he believed to be rudimentary structures. The umbilical vesicle did not possess the necessary epiblast for covering the placental villi. He thought Dr Ballantyne's facts

ought rather to be used as a proof that the placenta was an organ of the chorion.

Dr A. H. F. Barbour, as against Dr Hart's views, referred to Hubrecht's description of the vitelline placenta in the hedgehog, where the covering of the villi was derived from the maternal tropho-spongia, and where the villi were actually larger than in the permanent allantoidal placenta.

Dr J. W. Ballantyne, in reply, did not admit the force of Dr Hart's objection regarding the absence of an epiblastic covering of the umbilical vesicle, for the temporary placenta in the hedgehog was formed from that structure. At the same time he had not claimed that the placenta was, in the sympodial fœtus, the organ of the umbilical vesicle, but that it was vascularised by the vessels of the umbilical vesicle instead of by those of the allantois.

VI. *Dr W. Fordyce* (*Secretary*) read a letter from *Dr C. F. Ponder*, Kalimpong, in reply to criticisms of his paper on the 'Action of the Midwifery Forceps.' On the suggestion of the Chairman, it was unanimously agreed that the Secretary be instructed to write to Dr Ponder, informing him that his letter had been read, but that the Society adhered to its former opinion regarding his views on the action of the midwifery forceps.

VII. A Communication entitled MODERN GYNECOLOGICAL SURGERY, by *Dr Georges Caromilas*, of Athens, Greece, was held as read. The following is a brief abstract thereof:—After an extended reference to the history of ovariotomy and the ovariotomists, from the time of Houstoun of Glasgow and M'Dowell of Kentucky up to the present day, the author narrates two cases of abdominal section in which great difficulties were met with both during and after the operation. The first case was one of a dermoid unilocular cyst of the right ovary, and of two abscesses in the left, in a patient suffering from malaria. Double ovariotomy was performed, but one of the abscesses ruptured during the operation, and much pus escaped into the peritoneal cavity. Careful washing out of the abdomen was performed, but the woman succumbed five days later to septicæmia. The second case was one of ovariotomy for a cystic growth of the right ovary in a woman, 26 years of age, who had had a full-time labour and a miscarriage. The cyst was removed without difficulty; but it was then found that there was also a solid growth on the omentum. This was removed by morcellation, and a loop of intestine was resected. She made a good recovery.

MEETING IV.—FEBRUARY 9, 1898.

Dr J. HALLIDAY CROOM, *President*, in the Chair.

I. The following gentlemen were duly elected Ordinary Fellows of the Society:—W. M. Milne, M.A., M.B., C.M., 10 Salisbury Place, Edinburgh; and Percival George Bannister, M.D., C.M. (Kingston), L.R.C.P & S. Edin., 25 Panmure Place, Edinburgh.

II. *The President* exhibited—(*a*) A SESSILE OVARIAN CYST. The notes of the case were as follow:—Mrs N. F., aged 36, admitted to the Royal Infirmary 25th January 1898. *Complaint*—Swelling of abdomen; pain in left side; loss of flesh. *Duration*—Ten months. *Family*—None; married one year. *Menstruation*—Quite regular ever since patient was married. Abdomen is greatly enlarged. Large central cystic immobile swelling; dull on percussion, with fluid thrill; no souffle and no other sound on auscultation. *P. V.*—Cervix is drawn up behind the pubis, so that sound cannot be passed; posterior fornix bulging, with continuation of the cystic tumour felt abdominally; the uterus cannot be got bimanually, as it is pushed right up behind the pubis. *Diagnosis*—Sessile ovarian. *Operation*—Large multilocular ovarian, completely enclosed in the layer of broad ligament, except a small portion about size of palm of hand; enucleated—no pedicle.

(*b*) A FIBROMA OF THE VAGINA. The notes of the case were as follow:—Mrs M. M., aged 37. *Complaint*—Growth at vulva. *Duration*—At least four years, but has grown rapidly during last four months. *Menstruation*—4½ months' amenorrhœa; has all the symptoms and signs of 4½ months' pregnancy. *Micturition*—Tendency to incontinence when straining. *Physical examination*—Vulval opening quite filled up with a large tumour which protrudes for 2½ inches beyond labia. *Surface*—Irregular, rough, and covered with semi-purulent exudation; does not bleed on scratching surface. There is no pain, and there is no enlargement of any of the glands in the neighbourhood. It is freely movable. Situated in the anterior vaginal wall, and extending from just behind the urethra backwards for 2½ inches. It has evidently burst through the vaginal mucous membrane, and the circumference at the base is 7¼ inches. *Diagnosis*—Fibro-myoma of anterior vaginal wall. *Treatment*—Enucleation.

III. *Prof. A. R. Simpson* showed—(*a*) TWO ANENCEPHALIC FŒTUSES. One of these had been sent to him by Dr F. A. Maynard of Mardy, Glamorganshire. The following were the clinical notes of the case:—The mother received a very severe fright when not far advanced in pregnancy; she was suddenly shown some rats, and one of them was thrown on to her head; from the fright and shock to her system she was very ill for some weeks. When

Dr Maynard was called to see her she was about seven months pregnant, and the left foot of the fœtus was at the vaginal outlet, and severe hæmorrhage was going on. Dilatation was quickly done, the other leg was brought down, and delivery was fairly easy. The placenta was very small; it was very adherent, and was with difficulty removed piecemeal. The cord was only 9¾ inches long. The woman had had four perfect children previously.

(*b*) A SUBPERITONEAL FIBROID AND UTERINE APPENDAGES. The following were the notes of the case:—F. M., æt. 47; nullipara; admitted to Buchanan Ward, January 13th, complaining of swelling in the lower part of the abdomen. Recommended by Dr Matheson, North Berwick. Some time ago she observed that her abdomen was gradually enlarging, and thought it was due to natural causes. Two weeks ago she got a chill, and felt gnawing pains in the lower part of the abdomen and back, and shooting pains in both thighs. Her doctor was sent for, and he discovered a pelvic tumour extending upwards into the abdomen. Her catamenia have for years been profuse and too frequent, and there has been an intermenstrual discharge—dark in colour and with a foul odour. At times there was dysmenorrhœa. Constipation was marked, and her water had to be passed frequently at night and also during the day. Indigestion and vomiting have troubled her for seventeen years. The patient is a thin, anæmic woman. On examining the abdomen a pear-shaped tumour, pelvic in origin, was found extending upwards almost to the umbilicus. It was firm and smooth, and slightly sensitive. To its right side was attached a rounded, freely movable mass as large as a fœtal head. A well-marked bruit was heard on each side of the mesial growth. The vagina was virginal. The fibroid and the appendages were successfully removed. There was also a large interstitial myoma.

IV. *Dr J. W. Ballantyne* exhibited—(*a*.) Photographs and Frozen Sections of a case of ANENCEPHALY WITH DIAPHRAGMATIC HERNIA, which had been sent to him for examination by Dr Millard. The birth of the malformed fœtus (female) was preceded by a pregnancy characterised by persistent vomiting. Life was felt only one week previous to labour, a fact of some interest in connection with the practically complete absence of the brain and spinal cord. The gestation had just passed the seventh month when labour occurred, and there was marked hydramnios, the quantity of liquor amnii of a turbid brown colour being estimated at 2½ gallons. Forceps had to be used to extract the fœtus. The placenta was entirely adherent, and had to be picked off with the fingers; it was very large but very thin, in no part being as much as ½ inch in thickness, and generally being ¼ inch; the veins from the cord were gorged with blood, the arteries empty. There were two or three fatty looking patches in the placenta; but no microscopic examination was possible, as the after-birth was not kept. Dr Millard did

not notice any abnormality in the membranes. The mother was 39 years old, and had had one previous labour, ending in the birth of a dead-born child. She is a healthy, well-developed woman, but very nervous, coming of a healthy family. Neither she nor her husband are alcoholic or tubercular, and there are no signs of syphilis. The sections of the fœtus showed marked anencephaly and complete spina bifida, with a considerable degree of retroflexion of the spine, and absence of about nine or ten of the vertebral bodies. The diaphragm was defective on the left side, and a mass of small intestines was found in the thorax; as a result the heart lay entirely to the right side of the middle line. The epidermis was peeling off in various parts of the body, and the fœtus had probably been dead a few days in utero.

(*b.*) Photographs, Drawings, and Frozen Sections of a case of FŒTAL BONE DISEASE, which had been sent to him by Dr Samuel Davidson. The fœtus was the offspring of a healthy woman who had been married at the age of 15¾ years, and had had seven full-time labours (no miscarriages) in the course of sixteen years. Her third child, a boy, had convergent strabismus, but the others were healthy at birth. The present pregnancy had been accompanied by much vomiting, and the fœtal movements had been less distinct than usual. There was hæmorrhage in the labour (ninth month), found out afterwards to be due to partial placenta prævia; there was also hydramnios. The presentation and position were normal, and delivery took place without artificial aid. The infant's heart was heard shortly before birth, but the child was dead-born. The cord was unusually short, not more than a foot in length. There was no family history of rickets; but the father was addicted to alcohol in excess. The infant, a female, had shortened lower limbs, fixed in an unnatural position. The short thighs passed outwards almost at right angles to the pelvis, and were sharply abducted; the legs were partly flexed, and showed a marked concavity on the inner aspect, and the feet were turned sharply inwards. The arms also were shorter than normal, and both in them and in the lower limbs there was a slight deepening of the natural folds and flexures. The head was broader than usual, the nose was shorter and somewhat flattened, and its bridge depressed, and there was a marked fold below the chin. The neck was short, and the whole trunk was plump. The fontanelles were large. The limbs could be moved with difficulty, and all the joints gave a creaking sensation. Several of the long bones showed fractures. Frozen sections revealed no premature ossification of the basis cranii, such as is often noted in typical fœtal rickets. The stomach was distended with a fluid rich in albumen, and the bladder contained about a drachm of non-albuminous urine. Two at least of the dorsal vertebral bodies showed defective ossification, the ossific nucleus being thin as compared with that in the other vertebræ. The case might be best described as chondrodystrophia fœtalis of

the hypoplastic type, and differed widely from the case of fœtal bone disease which he (Dr Ballantyne) had shown to the Society in 1889, and in which the cartilage of the ends of the long bones showed enormous hypertrophy.

V. *Dr Church* showed a GARMENT which he had designed for the treatment of masturbation in a young girl. It had been successful.

VI. *Dr Angus Macdonald* showed for *Dr Brewis*—(*a.*) A DERMOID TUMOUR OF LEFT OVARY, removed successfully by abdominal section from a lady of 72. The tumour was in a semi-gangrenous condition, with hæmorrhage into its substance, and the pedicle was found to be twisted through two complete turns. The patient had recently had several severe attacks of local peritonitis.

(*b.*) RIGHT-SIDED APPENDAGES, showing unusual cystic dilatation and presence of bony mass—probably a dermoid tumour of ovary. Appendages of other side in similar condition, but not removed.

(*c, d.*) Two other typical DERMOID TUMOURS.

(*e.*) Right and left cystic OVARIAN TUMOURS, showing extensive degenerative changes (myxo-sarcomatous?). Patient made excellent recovery after removal by abdominal section.

(*f.*) APPENDAGES removed for FIBROID UTERUS: one ovary showing small pediculated fibroid.

VII. SENILE UTERINE CATARRH.

By J. HALLIDAY CROOM, M.D., F.R.C.P.Ed., Physician to, and Clinical Lecturer on Diseases of Women, Royal Infirmary, Edinburgh.

THE condition which I propose shortly to discuss is one which is much more frequently met with in private than in hospital practice. Indeed, I can scarcely say that I have met with a typical case in hospital. This is easily explained, as the symptoms, though troublesome, are not severe, and the poorer classes do not seek relief except under circumstances which are more or less urgent.

The subject of endometritis occurring in old women, or rather in women who have for some years passed the menopause, is but meagerly if at all described in any of the text-books—not even in the more recent ones. Various monographs have, however, been written on the subject, and the condition described under various titles. Thus, some have called it the 'fœtid endometritis of old women,' others 'post-climacteric endometritis.' Matthews Duncan described it under the name of the 'leucorrhœa of old women.' But I am inclined to think that the term which best describes the group of symptoms is 'senile uterine catarrh.'

With the ordinary uterine catarrh of fertile women everyone is familiar, due to the condition of subacute endometritis, and one of

the most frequent causes of sterility. The importance, however, of the condition occurring after the climacteric cannot be questioned, and I am sure that a due appreciation of it would save many an unfortunate woman from vaginal hysterectomy, which, with improved methods and increased safety, is too apt to be had recourse to without adequate reason.

It is well known that the great difficulty in the management of such cases is the differential diagnosis from malignant disease, but it seems to be that this is exaggerated, and that with due care and no unnecessary haste an accurate diagnosis can be made in the majority of cases.

Sexton, in an admirable paper on 'post-climacteric endometritis,' advocates the use of this term, because most appear soon after the menopause. With this I entirely agree. However, while most do come under observation soon after menstruation has ceased, in my experience a large number seek advice many years after the climacteric, and these are the most marked cases, although the most difficult to diagnose.

Before going further, and without multiplying cases, let me give three typical examples :—

CASE I.—A patient, æt. 70, complained of a fœtid muco-purulent discharge, accompanied by constant pain in the back, with occasional and irregular attacks of colicky pain in the pelvis, but there was no hæmorrhage whatever. She was pale, sallow, and emaciated. The uterus was about 2½ in. long, retroverted and mobile. The os was somewhat gaping. Her main trouble was the fœtid discharge, and it was for that she specially asked advice. The condition had continued for eighteen months. The diagnosis naturally lay between a commencing malignant disease of the body of the uterus and simple catarrh. She had a probe passed from time to time, dressed with pure carbolic, hot douching, and arsenic; and under this treatment she, after three months, was quite cured, and lived for ten years longer.

CASE 2.—A patient, æt. 65, complained of profuse leucorrhœal discharge, sometimes streaked with blood, and occasionally accompanied by a small clot. She had well-marked backache and occasional griping pains in the pelvis. The uterus was considerably enlarged—about 3½ in., hard and globular. In this case the diagnosis was again difficult, but after dilatation of the cervix and curettage of the cavity, with subsequent packing, the patient had no further trouble, and now, after six years, is perfectly well.

I mention the lapse of time, simply because it proves there was no tendency to malignancy in the condition.

CASE 3.—The third and last type of cases is that of a patient who, three years after the menopause, had a sudden and profuse hæmorrhage; it was associated with no pain, the os was gaping and soft, the uterus enlarged to about 3½ in. The hæmorrhage

continued at intervals of two or three days for three weeks. The woman was extremely emaciated, and appeared in very feeble health. The difficulty here, I confess, was considerable. With a view, therefore, to settle the question, I still further dilated the cervix, and finding no specially marked prominence in the walls, I scraped the mucous membrane, applied an escharotic, and afterwards drained by means of iodoform gauze, and the patient had no recurrence of her symptoms after a lapse of five years. This patient had every symptom of cancer, but there being no definite evidence of it on examination, she was treated for the simple condition, and got well.

As I have already said, I could multiply cases to illustrate these types, but I take it that these three illustrate what I consider the three forms of senile uterine catarrh :—

1. Those associated with fœtid discharge and no hæmorrhage;
2. Those associated with leucorrhœa and slight hæmorrhage; and
3. Those in which hæmorrhage is the main, if not the only symptom.

Of course everyone is aware that post-climacteric hæmorrhages are due in the main to (1) the commencement of cancer, or (2) to the recrudescence of a fibroid, or (3) occasionally in gouty women, but of course in the gouty condition it is only a form of uterine catarrh, with gouty endometritis as its basis.

The symptoms are extremely like those of malignant disease. The patient suffers from vaginal irritation, and shows marked signs of general cachexia, the skin becoming sallow, and general emaciation sets in. This is really due to a slow sepsis, which is further shown in occasional rigors and night sweats. The most striking symptom, and that for which the patient generally seeks advice, is the vaginal discharge, which is watery and semi-purulent, though frequently it contains a considerable amount of blood. The odour of this discharge cannot be said to be characteristic: it is, as a rule, though not always, most offensive, and in some cases I have seen has been even more so than in marked cases of cancer. It may cease from time to time, and when it reappears it is generally with a gush of sanious pus. Along with these symptoms there is frequently a certain amount of abdominal pain, pain in the back, and 'progressive invalidism.'

Per vaginam, one finds the uterus slightly enlarged, or more often normal in size—as a rule, not normally atrophied. The introduction of the sound causes great pain, and if a scraping be removed, this shows inflammatory changes—infiltration of leucocytes, reduplication of cells, and granular degeneration. The mucous membrane of the uterus has become hypertrophied and succulent, and is easily detached. In cases of malignant disease of the body of the uterus, all the above-mentioned symptoms are

aggravated, but on vaginal examination the uterus is always markedly enlarged and much more fixed than in senile catarrh.

Real 'floodings' are much more common in cancer than in the simple condition. With appropriate remedies, senile uterine catarrh will be found to rapidly improve in the course of a week or two, whereas any treatment other than operative is of no avail in malignant disease; and I have only very seldom found that in doubtful cases the delay at all interfered with the ease with which vaginal hysterectomy was later, if necessary, performed.

Now, with regard to the differential diagnosis between primary corporeal cancer and senile uterine catarrh, the following points are worthy of consideration:—

First and foremost, in most cases of primary fundal cancer, periodic and severe pain is an early and prominent symptom; whereas in senile uterine catarrh the pain is irregular and colicky, or if not, it is slight and constant.

Secondly, in cancer, fœtid discharge, at least in the earlier stages, is unusual, because the os is closed, and the surface of the cancer is protected from external influences; whereas in catarrh, especially in the first two forms I have mentioned, fœtid discharge is a prominent and early symptom.

Thirdly, local examination in cancer finds the uterus distinctly enlarged, sensitive, and early becomes heavy and fixed; whereas in the simpler condition the uterus either is normal or only slightly enlarged, and remains freely movable throughout.

And, lastly, dilatation and local exploration reveals the presence of a neoplasm in the one case and the absence of all irregularities in the other.

As regards the causes of this senile condition of the uterine mucous membrane, it is difficult to speak with certainty.

1. As a rule, when women have not suffered during their menstrual life from any disorder of the pelvic organs, one may affirm that after the menopause they will be free from uterine disease, since the organs undergo physiological atrophy. But if the patient has been the subject of a fibroid tumour, or has suffered from displacement of the uterus or of any form of inflammation, the uterus may continue large after the menopause, and may be the subject of post-climacteric inflammation, though this is always less marked than when menstrual congestion regularly recurs to aggravate the condition. Yet undoubtedly there are many cases in which senile catarrh occurs, in which there is no history of ante-climacteric disturbance, and in which the uterus is normally poised, and gives no evidence of surrounding inflammation.

2. Tilt pointed out that very often the cervix shrinks, whereas the body of the uterus is inflamed and the fluid becomes pent up, giving rise to colicky uterine pains.

Matthews Duncan had several times to puncture the cervix, so as to allow the escape of inflammatory fluid.

The cases Tilt knew best were those of senile inflammation of the cervix and of the vagina—not so much of the body; and for these post-climacteric inflammations he strongly recommended caustics.

I should like strongly to insist that this condition of senile uterine catarrh is not prodromatic of malignant disease, the two are quite distinct, and I have never seen a case of the simple condition later become one of cancer.

As regards the treatment adopted, when the condition is non-malignant or doubtful, I have had the best results from rest, hot douching, and the internal administration of arsenic, strophanthus, and Chian turpentine. To give the last-named drug may seem contradictory, as it was long supposed to have beneficial effects in cases of cancer. This I do not believe, but it is quite certain that it has a good effect on inflammatory conditions; and, it seems to me, has almost an equally good effect in clearing up purely uterine inflammation, as in cervical inflammatory hypertrophy.

Nothing gives better results than either the application of escharotics by means of dressed sounds, or, still better, the curettage of the mucous membrane, with subsequent packing and draining.

The main point I wish to insist upon in this paper is the fact that these cases are so often mistaken for malignant conditions; and I have repeatedly had patients, supposed to be suffering from malignant disease, sent to me for hysterectomy, who were sufferers from the simpler condition, and which responded to simple treatment.

Professor Simpson said they were all indebted to the President for calling their attention in his lucid and instructive communication to a subject of much practical importance. He (Prof. Simpson) recognised the faithfulness of the description of senile endometritis, and would only add, in regard to the history of the disease, that it was sometimes associated with senile colpitis. This latter condition sometimes gave rise to much the same train of symptoms, and might occur alone, or as a complication of the intra-uterine mischief. The line of treatment recommended was no doubt the correct one; and in regard to the administration of Chian turpentine, it was easy to believe in its value in the treatment of this simple disease as well as in the treatment of cancer, for which Dr Clay had proposed it as a specific. Like all the turpentines it had a styptic action, which made it serviceable in all the uterine hæmorrhages; and further, it seemed to act as an antiseptic in the blood, and to have a distinct power of lessening the amount and the putrescence of discharges from inflamed and necrotic surfaces.

Dr Barbour thought that this paper was of special value when

the operation of vaginal hysterectomy was becoming so common. What struck him in the President's cases was the enlargement of the uterus. That the uterus was in simple cases sometimes enlarged to 3½ inches after the menopause was an important clinical fact. He was not sure that a sensitive condition of the fundus was characteristic of malignant disease rather than of catarrh.

Dr Haig Ferguson begged to thank Dr Croom for his very interesting and instructive paper. He wished to ask if, in the case Dr Croom spoke of, where the uterus was 3½ inches in length, the patient had not previously suffered from a uterine fibroid, as in the cases of senile catarrh which Dr Ferguson had observed there had never been such an increase in the size of the uterus, unless a previously existing fibroid condition of the uterus had been present, itself the probable cause of the catarrh.

Dr J. W. Ballantyne referred to cases of senile endometritis with atrophy of the mesometrium instead of hypertrophy. In such cases he fancied the packing of the uterine cavity with iodoform gauze would be a safer procedure than uterine curettage.

Dr Fordyce, in thanking Dr Croom for his interesting and valuable practical paper, gave the history of a case which he had recently seen in consultation. The woman, æt 60, an inmate of an asylum, had an extremely offensive sanious discharge from the vagina. The os was slightly patulous, and it was at first thought there was intra-uterine malignant disease. After dilatation of the cervix under chloroform, it was found that there was a small fibroid in the anterior uterine wall. The mucous membrane of the uterus was thick and spongy, and the uterine cavity contained a large quantity of very fœtid purulent blood-stained fluid. The uterus was thoroughly curetted, and iodised phenol applied to the cavity, and for some days subsequent to the operation antiseptic intra-uterine douches were given. The treatment was followed by a complete cure of the offensive discharge, and the patient's general condition had undergone a marked improvement. He considered the case might be considered one of senile uterine catarrh, though the presence of the fibroid was probably the exciting cause of the condition.

Dr Church thought that microscopic examination of the discharge might be helpful in differential diagnosis. In malignant disease the characteristic epithelial cells would be seen; in a case of senile uterine catarrh they would not.

VIII. INTRA-UTERINE TYPHOID.

By W. Fordyce, M.D.

Mr President and Gentlemen,—Recent advances in bacteriology and microscopic methods have rendered possible the scientific proof that infectious disease of the mother during pregnancy can

be transmitted to the fœtus in utero. It is true that in some of these diseases confirmatory proof was hardly necessary. More or less common clinical facts, such as the occurrence in newly-born children of well-marked syphilis, and the characteristic eruptions of variola, scarlet fever, and measles, left no room for doubt that in these diseases, at any rate, transmission of the poison from mother to child did occur. In others, however, where the symptoms and naked-eye appearances of the disease are not so evident as in those mentioned, definite proof of their transmissibility was more difficult, and in fact only possible when bacteriological discoveries furnished new means of diagnosis. In this group must certainly be placed typhoid fever, and I feel that no apology is necessary for putting on record the following case, in which I think it is definitely proved that the fœtus was infected in utero by the specific organism of typhoid fever; for altogether apart from the general interest of the subject, the recorded cases are comparatively few in number, and so far as I have been able to find out, not one has been noted in this country.

Report of Case.

On the evening of Nov. 9, 1897, in the absence of Dr Barbour from Edinburgh, I was asked by Dr Cooper, house-physician at the Maternity Hospital, to go to the Cowgate and see a patient who was aborting at the fifth month, and who seemed to be seriously ill. On arrival I found the woman, a multipara, in indeed a very grave condition. She was in a semi-comatose state, but could be roused when spoken to loudly, and during the uterine pains which were taking place she made feeble expulsive efforts. The face was pale, with a dull malar flush. The tongue, lips, and gums were dry, cracked, and covered with thick brown sordes. The pulse at the wrist was rapid and barely perceptible. The extremities were cold and clammy, but the temperature in the axilla was 102° F. The pupils were dilated. My first impression on seeing the patient was that she was suffering from typhoid fever, and on suggesting this to Dr Cooper, I learned that this diagnosis had already been made by the student who had been in attendance on the case. The antecedent history which I got from Dr Whyte of the Cowgate Dispensary is as follows:—Six weeks previously patient took what seemed to be an attack of appendicitis, was very feverish, and complained of great abdominal pain and tenderness over the right iliac region. A week later she passed some blood by the bowel. The temperature was 102°, but there was no diarrhœa. Improvement then took place in her condition, and for some days she was apparently convalescent, but during this time it is to be noted she was getting morphia internally, and this may have masked some of the symptoms. Normal diet had been resumed only a few days, when there was a recurrence of the

more serious symptoms. The temperature went up to 103°, and patient complained of great headache, sleeplessness, vertigo, and diplopia. Dr Whyte at this time first saw the patient, and suspecting typhoid fever, had some of the urine examined at the Fever Hospital. It gave a faint Ehrlich-Diazo reaction, and it was decided to send her into hospital. Some improvement, however, again took place, and she would not consent to leave her own home. This improvement was of short duration, the fever returned, diarrhœa set in, and then labour pains came on, when assistance was sent for to the Maternity Hospital. I am sorry to be unable to give a more exact and detailed history, but the student who was first in attendance seems to have seen the case but seldom during the first three weeks, and it was not till Dr Whyte was called in that the serious nature of the patient's illness was suspected.

I am aware that too much stress must not be laid on the Ehrlich-Diazo reaction of the urine. It is occasionally seen in other febrile conditions, such as scarlet fever, pneumonia, and acute tuberculosis, but is almost constantly present in typhoid fever, even when the temperature is not a marked symptom. Admitting this, and in the absence of any other ascertainable cause to account for the patient's serious symptoms from the history of the case, imperfect though it may be, and from the typhoid appearance of the patient when I first saw her, I think I am justified in concluding that the woman was suffering from typhoid fever. (As she died on the following day I hoped to have been able to verify my diagnosis by post-mortem examination, but this was refused.)

On making a vaginal examination to ascertain how far labour had advanced, I found the os uteri dilated to about the size of a shilling and slight hæmorrhage going on. The uterus, reaching to nearly the umbilicus, was contracting feebly and at long intervals. Notwithstanding the very grave and almost hopeless condition of the patient, I thought it was giving her the best chance to empty the uterus and so stop further hæmorrhage. I accordingly dilated the os slightly with my fingers, ruptured the membranes, and turned and delivered. I found it necessary, however, to perforate the head with my finger before I could get it to pass through the partially dilated cervix. I then cleared out the placenta, and the uterus contracting fairly well, there was practically no subsequent hæmorrhage. The fœtus—a normal five months'—was perfectly fresh ; there was no trace of decomposition. It had evidently been alive up to the time of delivery. The placenta had some adherent clots on the maternal surface indicating premature separation, but seemed otherwise normal. After the uterus was emptied the mother's condition seemed to improve, though this was probably due more to the stimulant hypodermic injections which were freely given than to the termination of the labour. She soon relapsed again into a more or less comatose condition, and died eighteen hours afterwards in spite of the most

careful attention and treatment on the part of Dr Cooper and his nurses.

On referring to the literature of the subject, however, I find that most authorities agree that pregnancy has no unfavourable influence on the course of typhoid fever. Vinay in 183 cases collected by different writers finds a mortality of 17 per cent., which is not above the average in non-pregnant women. On the other hand, typhoid exercises a very important influence on the course of gestation, abortion occurring in at least two-thirds of the cases, *e.g.*, in 310 cases collected by Sacquin abortion occurred in 199, and in 109 cases collected by Martinet 66 aborted. The cause of abortion is not certain, and varies probably in different cases. In one it may be the high temperature, in another the accumulation in the blood of toxins may set up uterine action, while in a third the death of the fœtus and consequent placental changes may be the exciting cause. The personal factor probably comes largely into play in each case. As in typhoid of a mild type, abortion may occur very early in the disease, while gestation may proceed to full time in others of the gravest description.

It is, however, to the effect of the fever on the fœtus in utero that I wish specially to refer. The morning following delivery, on the suggestion of Prof. Simpson, to whom I am much indebted for the specimen and the opportunity thus afforded of making this investigation, I made a careful examination of the fœtus to see if there was any indication of transmission to it of the disease from which I believed the mother to be suffering. Externally, to the naked eye, nothing indicating typhoid was apparent. The fœtus, as before stated, a normal five months, was perfectly fresh, and showed absolutely no trace of intra-uterine putrefaction. Before making any dissection, as I wished to avoid any error in the bacteriological experiments I proposed making, the skin of the abdomen was carefully and thoroughly cleansed with lysol solution. On opening the abdomen with sterilised instruments a small quantity of serous fluid was found in the peritoneal cavity. This fluid was carefully kept for the purpose of making Widal's serum diagnosis test for typhoid, which will be referred to later. Excepting the presence of this small quantity of serous fluid in the abdominal cavity nothing else abnormal was found. The intestines seemed quite healthy. The liver and spleen were not enlarged. Inoculations of tubes of agar-agar and gelatine were next made from the kidney, spleen, intestinal contents, and blood of the left ventricle with the strictest bacteriological precautions. A small quantity of blood was drained from the umbilical cord and kept for the Widal test, and portions of the liver, spleen, kidney, placenta, and cord were also preserved for microscopic examination. The following day Dr Noël Paton and his assistant, Mr Patterson, in the R. C. P. Laboratory, where this investigation was carried out, kindly examined the inoculated tubes of agar-agar for me,

and their report is as follows:—(1) On tube inoculated from the kidney there is present a round, whitish, moist-looking colony, which on microscopic examination proves to be a pure culture of a bacillus identical with that of Eberth's bacillus, the specific organism of typhoid fever. (2) On tube inoculated from the spleen two round colonies similar to that from the kidney and microscopically also identical with the typhoid bacillus. On the tube inoculated from the intestinal contents a pure growth of the same bacillus covered all the surface of the agar-agar. The tube inoculated from the blood remained sterile.

The naked-eye appearances and the microscopic character of the cultures obtained by inoculation were therefore those of Eberth's bacillus. The bacillus coli communis, however, closely resembles Eberth's bacillus in both these respects, and we had to examine further to be sure that we had to do with the latter and not the former. We have fortunately now a precise means of distinguishing these two bacilli in what is known as Widal's agglutinative test. The test (I quote from Muir and Ritchie's recent Bacteriological Manual) is based on the fact that living and actively mobile typhoid bacilli if placed in the diluted serum of a patient suffering from typhoid fever within a short time lose their mobility, and become agglutinated into clumps. The diluted serum has no similar action on the bacilli coli communis, and hence serves as a definite and sure method of distinguishing the one from the other. The action of the diluted serum taken from the peritoneal cavity in my case on a pure culture of typhoid bacilli was perfectly characteristic; the clumping and agglutination of the active bacilli taking place, as I could see for myself, almost immediately. The result of the same experiment with the blood taken from the left ventricle was not so striking, the agglutination and clumping were longer delayed, and not so perfect as in the first instance. Further proof that we had to do with the typhoid bacillus and not with the bacillus coli communis was afforded by the action of the cultures on milk. No curdling took place. It will be remembered that the bacillus coli, on the other hand, does have this effect on sterilised milk. The portions of liver, spleen, kidney, placenta, and umbilical cord were carefully hardened, stained with thiosin, and examined microscopically, but so far in the sections I have examined I have been unable to find any bacilli. This, however, Dr Muir tells me is not to be wondered at, the detection of the bacillus in the tissues being often exceedingly difficult. When I began the examination of my specimen I was unaware that experiments on exactly similar lines had already been carried out in Germany and France by several others, and it was interesting to find, if at first somewhat disappointing, that their results were in the main similar to my own.

In the earliest investigations on this subject, proof of the existence of fœtal typhoid was naturally sought for in lesions of the intestine similar to those found in the adult. It is not surprising,

therefore, to find Manzoni first, in 1841, recording the case of an infant born at the seventh month in a case of typhoid fever, in which he found alterations in the small intestine, which led him to believe that the child had suffered from the same disease during intra-uterine life. Charcellay in the same year published another case of an eight months' fœtus, in which he found well-marked macroscopic changes in Peyer's patches and Brunner's glands, but he does not state if the mother had typhoid fever. In 1862 Weiss next reported an abortion at the sixth month on the 15th day of typhoid fever. The spleen was enlarged, the mucous membrane of the small intestine injected, Peyer's patches swollen, and the mesenteric glands enlarged. These observations, though interesting, in the absence of bacteriological examination are of little value. Naked-eye changes in the intestine and spleen cannot be considered as necessary signs of fœtal typhoid. They were absent in my own and in nearly all of the more recently carefully recorded cases. Bacteriological examination of the fœtal organs was first undertaken by Reher in 1885, the year after the discovery of the specific organism of typhoid fever. This observation was made on a six months' fœtus, born on the 19th day of typhoid fever. No macroscopic lesions indicating typhoid were found, but pure cultivations of Eberth's bacillus were got from the liver and spleen. Neuhaus in 1866, in a four months' fœtus, got similar results from bacteriological experiments, and the following year Chantemesse and Widal confirmed the observations previously made by Neuhaus and Widal. Then, in 1893, Eberth doubting the results obtained by previous observers on account of the difficulty of differentiating the typhoid bacillus from other similar bacteria, made a most careful and complete examination of a case that came under his care. The case was a particularly suitable one, as the fœtus expelled at the end of the third month was still enclosed in the membranes, which had not ruptured. Pure cultivations of the typhoid bacillus were got from the blood of the heart and the various fœtal organs. He also checked his experiments by examining with the same vigorous bacteriological precautions the blood and organs of several other fœtuses, the mothers of whom had not been affected with typhoid. As a rule the results here were negative; in some few cases bacilli were found, but in no instance did these bear any resemblance to the specific organism found in the first experiments. Similar observations have been published by Freund and Levy, Ernst, Giglio, Dürk, and others. In the most recently published cases last year by Etienne, Chambrelent, Griffith of Philadelphia, Charrier and Apert, and Speier, Widal's test has been applied in the diagnosis of fœtal typhoid. Etienne failed to find the reaction in the blood of a fœtus, though that of the mother gave it very clearly; and Charrier and Apert in their case, a three months' fœtus, also failed to find it. On the other hand, Widal and Sicard found the reaction in the blood of the

young of a rabbit which had been inoculated four days previously. It was also present in Speier's case. Chambrelent's and Griffith's cases in this relation are specially interesting, as in both the children survived. In the case of Chambrelent the child was born at the eighth month during an attack of typhoid fever. It was evidently seriously ill when born, but rapidly recovered. There was a typical Widal reaction with its blood serum.

The child in Griffith's case was born at full time, and seemed quite healthy, and yet seven weeks later the Widal reaction was distinctly got with its blood serum, thus proving that either the child had had typhoid fever in utero, or that the agglutinating principle had passed through the placenta from the mother to the fœtus, without the latter having contracted the disease at all. Analogy to other infectious diseases, and the fact that fœtal typhoid does occur, renders, as Griffith points out, the first supposition most probable.

From the study, then, of these cases, I think we can formulate the following conclusions:—

1st. That typhoid fever can be communicated to the fœtus in utero.

2nd. That as a result of this infection, the fœtus may die and be expelled prematurely.

3rd. That the fœtus may be born alive but weakly, and evidently suffering from the infection (Chambrelent).

4th. That the fœtus may be born alive and healthy, having passed through the infection in utero.

Finally, it may be added that infection of the child in cases of maternal typhoid does not of necessity follow. Cases are on record where the most careful bacteriological examination failed to discover the pathogenic organism in the fœtal organs, *e.g.*, the case recorded by Fränkel and Kinderlin. The diagnosis of typhoid in the mother was confirmed by post-mortem examination. Abortion had occurred on the seventeenth day of the disease, at about the fifth month, and the fœtus was alive when born. Repeated and most careful bacteriological examinations of the blood, liver, kidney, intestinal contents, etc., gave negative results. Small colonies of the staphylococci pyogenes albus and flavus were got from the spleen, but no trace of Eberth's bacillus was found.

Under what conditions the fœtus becomes infected and under what conditions it escapes is a question very difficult to determine. The first experiments on the lower animals seemed to show that the epithelium covering the fœtal villi formed a barrier to the migration of pathogenic organisms, as well as to the passage of other substance not in a state of solution, from the maternal to the fœtal blood. This was, however, not in accord with clinical experience, and since 1882, when Arloing Cornevin and Thomas found the specific bacillus in a young sheep, the mother of which was affected with anthrax, numerous experiments with the

specific organisms of chicken cholera, glanders, septicæmia, tuberculosis, recurrent fever, and erysipelas, prove conclusively that migration in these diseases can and does take place from the maternal to the fœtal circulation. According to Malvoz and others this can only occur when there is some placental lesion destroying the villous epithelium. Others again think there is strong enough evidence to show that living micro-organisms can penetrate directly this epithelium. Positive proof that there is no placental lesion in any given case is almost impossible, as if the organisms are present in any quantity in the maternal blood, a microscopic lesion of the villous epithelium would alone be necessary to permit of infection taking place. If such a lesion is necessary, then it may be produced by the organisms themselves accumulating on the villus, where it hangs free in the maternal circulation.

Malvoz's theory certainly explains better than the other how it is that in twin pregnancies in certain infectious diseases the one fœtus is infected and the other escapes.

I append a bibliography of the subject, and in conclusion I wish to express my indebtedness to Dr Noël Paton, Superintendent of the Royal College of Physicians Laboratory, for his kind assistance and advice in carrying out the bacteriological part of this investigation, and to Dr J. W. Ballantyne in helping me with the literature.

BIBLIOGRAPHY.

EBERTH.—*Fortschr. der Med.*, 1889.

ERNST.—*Ziegler's Beiträge zur Pathol. Anat.*, vii., 1890, p. 188.

FRANKEL and KINDERLIN.—*Fortschr. der Med.*, 1889.

FREUND and LEVY.—'Ueber Intrauterine Infection mit Typhus Abdominalis,' *Berlin. klin. Wochenschrift*, 1895, p. 539.

GIGLIO.—*Cent. für Gyn.*, 1890, No. 46.

HILDEBRAND.—*Fortschr. der Med.*, 1889.

MANZONI.—*Acad. de Médecine*, 1883.

NEUHAUS.—*Berlin. klin. Wochensch.*, 1886.

REHER.—'Zur Ætiologie des Abdom. Typhus,' *Arch. für Exp. Path.*, xix., 1885, p. 430.

SACQUIN.—*Thèse de Nancy*, 1885.

VINAY.—*Traité des Maladies de la grossesse*, 1894.

WEISS.—*Allgemein Wiener Med. Zeitung*, 1862.

CHANTEMESSE et WIDAL.—*Arch. de Physiologie*, 1887.

ETIENNE.—*Gaz. hebdom. de Méd. et de chir.*, 1896, p. 184.

CHAMBRELENT.—'Passage du Microbe d'Eberth à travers le Placenta,' *Jour. de Méd. de Bordeaux*, Nos. 21, 22, 1897, p. 245 and p. 257.

CHARRIER et APERT.—'La Reaction agglutinante, dans les humeurs d'un Embryon de trois mois,' *Comptes rendus hebdom.*, vol. iii., x. series, p. 1103.

GRIFFITH.—'Fœtal Typhoid Fever, and the Widal Reaction.' *The Med. News*, 1897, p. 626.

WIDAL and SICARD.—*Bull. de l'Acad. de Méd.*, xxxvi., 347, 1896.

LIVOW.—'Über den Einfluss der Typhus exanthem. auf den Verlauf der Schwangerschaft und auf die Frucht,' *Cent. f. Gyn.*, xviii., 1894, No. 43, p. 1087.

DÜRK.—'Über intra-uterine Typhus und Mischinfektion enier lebensfähigen Frucht,' *Munch. Med. Woch.*, 1896, No. 36; *Cent. f. Gyn.*, vol. xx. 1896, No. 46, p. 1182.

Prof. Simpson agreed with the President as to the value and interest of Dr Fordyce's communication. The relations of the intra-uterine fœtus to the febrile affections of the mother were very obscure, and it was of great importance that such investigations should be carried out as had been made by Dr Fordyce in this particular case. If he (Prof. Simpson) were to offer a criticism of the paper, he would suggest that there might be other explanation of the cause of abortion in typhoid gravidæ besides those noted by the author, such as the tendency to hæmorrhage that was a characteristic of typhoid fever, and that was liable in pregnant women to affect the placenta. To complete the history it would be necessary also to take note of some observations that had been made in France as to the transmissibility of the typhoid element from a nursing mother to her child. Dr Fordyce had referred to the observation of Widal and Sicard as to the agglutinative test being found in the blood of young mice cast by a mother on which they were experimenting. Quite recently Landouzy and Griffon and others had found both the milk of nurses affected with typhoid and the blood of the infants showing the agglutinative test.

Dr J. W. Ballantyne said he had listened with a great deal of profit to Dr Fordyce's exposition of the interesting case of fœtal typhoid fever. He thought the reason why so few pregnant women succumbed to typhoid fever was the condition of physiological hypertrophy of the heart which was present. He had been informed a few days previously of a severe case of typhoid in a woman at the sixth month of her pregnancy; she was now almost convalescent, and the gestation had so far been uninterrupted. The peculiarities in the pathological appearances in fœtal typhoid (the frequent absence of characteristic intestinal lesions for example) might be due to the almost quiescent condition of certain organs in fœtal life, or to the transmission of the infection through the placenta instead of by the mouth. There were still many undecided questions regarding the placental transmission of microbes and their toxines. He thought that possibly the liquor amnii might sometimes have been a channel of infection, microbes passing into it through the stomata in the amnion and then being swallowed by the fœtus. Typhoid in the fœtus so acquired might be called 'water borne.'

Dr C. B. Ker said it was unfortunate a post-mortem was not made, but the history given by Dr Fordyce pointed to a case of true typhoid with a relapse, in which the patient died. He would not, however, put much stress on the Ehrlich reaction. Dr Ker himself had been less fortunate, the blood of a fœtus aborted by a patient of his not giving the serum test, and therefore probably not having the fever.

MEETING V.—MARCH 9TH, 1898.

Prof. SIMPSON, *afterwards* Dr BARBOUR, *in the Chair.*

I. The following gentleman was duly elected an Ordinary Fellow of the Society:—W. J. M. Barry, M.D. (Brux.), M.R.C.P.E., etc., 72 Lower Baggott Street, Dublin.

II. *Dr Owen Mackness* showed a specimen of MISSED ABORTION. The following were the notes of the case:—The patient was pregnant for the fourth time; her former labours have all been normal, except that they were extremely precipitate. She menstruated last on 23rd May, but pregnancy could not have occurred before 1st June. On 10th August, after a long bicycle ride, fairly severe uterine hæmorrhage came on; there were no pains and the os uteri was closed. She was put to bed and kept there for a fortnight. For the first five days Viburnum Prunifolium was administered, but as the hæmorrhage still continued ♏x of the Fluid Extract of Ergot every four hours was substituted. The hæmorrhage gradually ceased, and by 27th August the patient was again going about, although she was cautioned to rest a great deal and use great care—this she faithfully carried out. At the beginning of October she noticed that her breasts, which up to this time had been enlarged and contained milk, were becoming quite flaccid, while her abdomen which, as is always the case with her in the early months of pregnancy, had increased a good deal in size, was gradually returning to its normal girth.

On 10th December she noticed a slight reddish-brown discharge, which continued on and off till 30th December, when immediately after dinner she felt, as she thought, a colicky pain, and went to the closet to get relief, then she had one severe pain, and this specimen was expelled. There was only very slight hæmorrhage, and her recovery was quite normal.

The specimen when fresh was about 5 inches long and 2½ inches wide; the placenta is apparently fatty, and the bag of membranes apparently contains nothing but fluid—it has not yet been opened, as I wished to show it entire.

The ovum probably ceased to grow soon after the hæmorrhage in August, but was not expelled until about four months later. This specimen differs from the one shown to the Society just two

years ago by Dr Haultain, in that the ovum had evidently become detached from the uterine wall some time before its expulsion, and had remained as a foreign body loose within the uterus.

III. *Dr F. W. N. Haultain* showed—(*a*) TUBERCULAR FALLOPIAN TUBES (primary ?) removed from patient 25 years old; (*b*) UTERINE APPENDAGES removed from a young woman who had never menstruated; and (*c*) the PHOTOGRAPH of a large OVARIAN TUMOUR (83 lbs.) successfully removed.

IV. *Dr J. W. Ballantyne* showed PHOTOGRAPHS of a LIMBLESS INFANT (amelic), and a SKIAGRAM of an INFANT'S ARM showing absence of the radius. The infants had been exhibited at a recent meeting of the Glasgow Obstetrical and Gynecological Society.

V. *Prof. A. R. Simpson* showed—(*a*) A DERMOID TUMOUR from a sheep; (*b*) a FIBROID TUMOUR OF THE FUNDUS UTERI which had produced inversion; and (*c*) a SKIAGRAM of NAEGELE'S PELVIS.

VI. THE USE OF QUININE AS A SUBSTITUTE FOR ERGOT IN MIDWIFERY.

By G. OWEN C. MACKNESS, M.D., Broughty Ferry.

ONE may, I think, assert, without fear of contradiction, that in this country, at any rate, the use of no drug is so universal as that of ergot in midwifery. The student who is launching on the unknown sea of his 'cases' feels that his first step is taken when he has purchased it; the general medical practitioner, summoned in haste, may forget his chloroform and his forceps, but will not omit to put ergot in his pocket; the midwife gives it in all and sundry cases where delay occurs in the delivery, too often, alas, with most disastrous effects to both mother and child. Our patients, more especially those who have already been through the hands of the older school of practitioners, clamour, one and all, for the 'doctor's tea' as soon as the pains begin to flag, and although the younger generation may rather beg for chloroform, it is not probably because they disbelieve in the efficacy of ergot, but rather because they desire their labour to be painless.

The tendency of modern teaching is to condemn its use, and yet in spite of this, and the fact, while the text-books warn us of its dangers and point out its defects, that all of us have probably by practical experience proved how true this condemnation is, it is still almost universally employed. The reason is not far to seek, for in many cases the labour pains are found to fail, and there is hesitancy on the part of the medical attendant to apply forceps and complete the labour, either because the patient or her friends object to instrumental interference, or because he himself feels that with some slight stimulus Nature herself ought to complete

the delivery. He at once administers ergot, not perhaps being ignorant of its defects, but because to the majority of men it is the only drug having this ecbolic action with which they are acquainted. Recently, of course, quinine has been largely used in its place, but the knowledge of this action of the drug is far from universal, and it is only used by a very small minority of practitioners. For this reason I have ventured to bring before the Society a few notes from my own practical experience of this drug, hoping that those who have had a larger experience will give us the benefit thereof.

The disadvantages of ergot are so well known that they may be dismissed in a few words.

1. Its preparations are very unreliable in potency and action; why this should be the case I am unable to say; but all must have noticed how variable are different specimens of the same preparation, and how often one gets a specimen which is practically inert.

2. It is difficult to administer; the liquid preparations, when given by the mouth, are nauseous in taste, and when given in large doses very frequently produce vomiting. Ergotin is a difficult preparation to keep; when made into pills they rapidly deteriorate, while a solution for hypodermic use, even when made up with antiseptics, soon goes wrong; further, although it rarely causes abscess when deeply injected into the muscles, still it produces a considerable amount of pain. Of ergotin I am unable to speak, as I have no experience of its use.

3. What we aim at in its administration is an increase of the labour pains, with relaxation between them just as occurs in normal labour; this is not the action of ergot. Lauder Brunton well describes its action when he says that it 'causes tetanic contraction of the uterine muscles with occasional increases of violence. There is no complete relaxation between the spasms as in ordinary labour pains.' This tetanic contraction has been recognised by all the text-books, and must have been noted practically by all of us who have watched its action. It has been stated that unless delivery is effected within half an hour of its administration, that is, before the tetanic contraction is fully developed, other means must be resorted to. This tetanic contraction is dangerous, not merely to the mother, but in a high degree to the child also, in that it interferes with the placental circulation to such an extent that asphyxiation is very apt to occur.

4. It is said to cause 'hour-glass contraction' of the uterus, but this result is so rare that it may almost be neglected.

The advantages of quinine, on the other hand, may be stated as follows:—It can easily be administered in the form of a pill which will keep for any length of time without deterioriation; in this form it is tasteless, and has no tendency, even in large doses, to produce vomiting.

Its action, further, is more certain than that of ergot, in that there is no variability in its composition, while the pills, if properly prepared, are easily soluble in the acid gastric juice, so that it acts rapidly; as a rule one begins to see its effects within, at the outside, twenty minutes after administration.

The chief advantage of quinine is that it does not produce tetanic contraction of the uterine walls, but merely increases the strength of the labour pains, while relaxation occurs in the intervals just as in a normal labour. This fact has been verified over and over again by placing the hand on the abdominal walls after the drug has been administered.

It is especially of use in those cases where the delay in delivery is due to inertia uteri pure and simple, *i.e.*, where the inertia is caused by the general exhaustion of the patient, or by actual want of power in the uterine muscles themselves, and where there is no obstruction present in the passages, such as rigid cervix, contracted pelvis, or rigid perineum, to hinder the delivery of the fœtus, and where the delay is not caused by some deviation from the normal in the fœtus itself—here of course ergot is contra-indicated, and so is quinine.

In primiparæ, however, where all is normal, but where slow dilatation of the passages causes exhaustion of the uterine muscles, before they can effect their object, I have found that quinine will often give fresh tone and stimulate them anew so that they are able to effect delivery without instrumental interference.

Its action of course is not always certain, and there still remain a large number of cases where forceps are required; but since commencing its use, my own experience has been that one requires to resort to forceps much less often, and cases which have before always required their use, have been completed by natural effort alone.

As to its dose and form of administration, I am in the habit of using four-grain pills of the sulphate. Of these, two are given, and if the pains do not increase sufficiently another is given in an hour, and yet another an hour later. As a rule, however, the second dose is effectual and one rarely has to give the third, making sixteen grains in all. One would naturally expect that with this large dose toxic symptoms would follow, but for some unexplained reason, although I have now used the drug in a very large number of cases, and always in these large doses, which in an ordinary case would undoubtedly produce symptoms of quinism, yet I have never once met with them—no headache, deafness, nor noises in the ears, ever have resulted.

Three typical cases of its use may be shortly related.

1. A v-para has required forceps in all her labours. The history of the last three has been almost identical in each case, viz., after full dilatation of the cervix the pains have gone off, and in spite of the administration of ergot, forceps have always had to be

applied. In her fifth labour, the pains began at 2 P.M.; at 7 P.M. the cervix was fully dilated, and the pains had entirely ceased. I ruptured the membranes, gave eight grains of quinine, and in spite of her clamour for chloroform and forceps, as in her former labours, determined to wait events; at 7.30 the pains commenced slightly; at 8 o'clock four more grains of quinine were given, and at 8.30 the baby was born by her own efforts and much to her own surprise.

2. A iv-para three months pregnant, took a long bicycle ride one afternoon, and at 8 o'clock the next morning had a severe hæmorrhage without any pain; at 8.30 I found the hæmorrhage still going on, no pains, and the os uteri just admitting the forefinger; eight grains of quinine were given and a hot antiseptic douche—the hæmorrhage became very slight, and shortly after 9 o'clock some pains commenced; at 10 o'clock four more grains of quinine were administered; shortly after, the pains became more severe; at 11 o'clock there was a pretty severe recurrence of the hæmorrhage, so another hot douche was given, and at 11.30 an abortion at the third month came away.

3. A ii-para, seven months pregnant. About two years ago she had a still-born child at the seventh month. The delivery was difficult owing to feeble pains, which were followed by tetanic contraction of the uterine muscles due to the administration of ergot, and which required the administration of chloroform before it could be subdued and delivery effected. On this occasion when I saw her the os was about the size of a half-crown, and the pains very feeble; eight grains of quinine were given, and I left her to see another urgent case, intending to return in an hour, but within half an hour I was hastily summoned to find the fœtus in the bed.

The above cases are merely typical ones chosen from a large number of similar ones in my own experience. Of course in many cases also it fails to effect the delivery, and one has to resort to forceps.

Ergot, then, is contra-indicated in all cases of labour where its ecbolic action is desired, but for the arrest of hæmorrhage from the uterus it is decidedly useful. When the hæmorrhage occurs during labour, quinine, however, is of more avail, since the hæmostatic action of ergot is here of little use, while the regular contractions set up by quinine will do more for its arrest and more quickly effect delivery than the tetanic contractions set up by ergot. It is in post-partum hæmorrhage that ergot finds its principal use. Here the hæmostatic action comes into play perhaps to some extent, while the tetanic contractions set up in the uterine muscles tend to close the gaping bloodvessels and arrest the hæmorrhage—it must, of course, be administered in large doses.

When abortion is threatened and there is bleeding, while pains

are absent, and the os uteri is closed, ergot in small doses is of great use—doses which will bring into play the hæmostatic action of the drug without being large enough to set up uterine contractions, viz., ♏x. of the fluid extract given every four hours.

In subinvolution of the uterus after delivery, ergot is of great use, more especially if there be much hæmorrhage. In one such case I used quinine with decidedly good results, probably owing to its tonic action on the uterine muscles, but my personal experience is limited to this one case.

The conclusions I would draw are the following:—

1. Ergot is contra-indicated during labour, but should post-partum hæmorrhage occur it is useful in large doses.

2. Ergot is useful in repeated small doses where abortion is threatened, hæmorrhage occurring without pains and the os uteri being closed. Further, it is useful in small doses in subinvolution of the uterus.

3. Quinine, grs. viii., followed by grs. iv. in an hour, and repeated after another hour if required, should be given wherever there is delay in the labour due to exhaustion of the uterine muscles, provided the delay is not caused by obstruction in the passages or deviation from the normal in the fœtus. In these latter cases, or where quinine fails to produce sufficient uterine contractions, forceps should be applied or other means of delivery resorted to.

Professor Simpson expressed his own obligation to Dr Mackness, and he was sure the other Fellows shared it with him, for the very interesting communication to which they had just listened. In his lectures he (Professor Simpson) had been in the habit of referring to the power of quinine to stimulate uterine contraction, even to the extent of causing abortion in pregnant women, but it was only on the authority of some of our foreign brethren; and it was extremely interesting to have one of our own Fellows giving us such satisfactory results from the use of quinine in his own practice. Dr Mackness' success would encourage British practitioners to have recourse more frequently to its administration in labour. He (Professor Simpson) was rather surprised to hear that ergot was still in such frequent use among general practitioners, and could only confirm the opinion of Dr Mackness as to the dangers attendant on it. Instead, however, of restricting its administration to cases of post-partum hæmorrhage, he thought it was not only justifiable, but sometimes desirable to administer the ergot at the close of the second stage or during the third in multiparæ, in whom there was reason to apprehend third stage hæmorrhage from uterine inertia. A most satisfactory preparation of ergotine was the sterilised solution of Yvon kept in glass capsules, each of which contained a syringeful of the preparation. Professor Budin had given him a box of the Yvon capsules a year ago, and he had used them in some cases with most satisfactory results.

Dr Barbour wished to learn whether Dr Mackness had used quinine to induce labour. He was trying it at present in a patient with severe chorea in pregnancy in 5-grain doses three times a day, as yet without effect so far as regards the induction of labour. He would now try it at shorter intervals, as Dr Mackness recommended.

Dr J. W. Ballantyne had used quinine as an oxytocic only in one instance of pregnancy, and then rather by accident than by design, but the emptying of the uterus had undoubtedly followed its administration. In a paper by Dr Coromilas, which he had contributed to the Society some years ago, a reference was made to the use of quinine for expediting labour in place of the forceps application. Personally he had for many years used digitalis in the same class of cases where Dr Mackness had employed quinine, and had got good results therefrom. Bossi, also, had recently described the use of sugar as an oxytocic, and there seemed to be a general tendency to look for drugs which might be safely used as uterine muscle excitants in place of the dangerous ergot.

Dr Ferguson joined in thanking Dr Mackness for his interesting paper. He would certainly give Dr Mackness' suggestion a trial when a favourable opportunity arose. Some other drugs, notably digitalis, had been mentioned as exercising a stimulating effect on the contractions of the uterus in labour, and he would like to call attention to one which had not been referred to, and which he believed to be a very valuable one, namely, strychnine. Strychnine was of the utmost value when given hypodermically to stimulate a flagging uterus, either preparatory to instrumental interference, or to assist in bringing about a natural termination of labour where the faults in some of the factors were but slight, and not insuperable. In cases where for some reason one feared the development of uterine inertia, strychnine given hypodermically was invaluable, and exercised a wonderful effect on a feeble uterus. Strychnine combined with small doses of ergot given internally was of great use in averting threatened abortion where hæmorrhage was the main symptom, and was good treatment, especially in the latter months of pregnancy, as a prophylactic against inertia and post-partum hæmorrhage, in cases where these complications were feared. As More Madden and Dr James Ritchie pointed out, cases thus treated not unfrequently had their pregnancies prolonged beyond the expected time, and labour commonly came on later than the calculated date.

Dr Lackie remarked that recently he had under his care a lady who had a history of very bad post-partum hæmorrhage at two previous confinements. He put her on quinine in small doses three weeks before labour was due. The confinement took place five weeks later, and Dr Lackie had never seen less blood at any accouchement. This might have been due to the quinine, but it might also have been accidental.

VII. ON THE CERVIX AND THE ATTITUDE OF THE FŒTUS IN LEOPOLD'S SECTIONS—'UTERUS AND CHILD.'

By A. H. F. Barbour, M.D.

In a former paper on Leopold's valuable Atlas of *Uterus and Child* in pregnancy, we considered the question of the origin of the placenta. Two other points of interest are raised in connection with this series of sections, namely, the condition of the cervix, and the attitude and position of the fœtus. These we propose to take up in the present paper.

As to the condition of the cervix, Leopold maintains that these sections give no support to the view that the cervix is taken up so as to form part of the cavity in which the ovum lies, whether mechanically by dilatation, or physiologically by differentiation. Although it is difficult to find terms which exactly describe these two views, we must keep them quite distinct. There is the one view, that by what I have called a purely mechanical process, or one of simple dilatation, the upper part of the cervix opens out in the later months of gestation so as to contribute to the cavity in which the fœtus lies. This mechanical taking up implies necessarily the shortening of the cervix.

The other view is that more recently brought forward by Bayer, who believes that the cervix contributes to the lower pole of the uterine cavity by a process of growth, its mucosa being converted into a decidua, and its muscular fibre becoming transformed into that of the lower uterine segment. This process I have called physiological to distinguish it from the mechanical; and it implies a process of differentiation of the cervical mucous membrane. While the uterine mucosa passes entirely into the decidua of pregnancy, the cervical mucosa in part continues as cervical mucosa, in part differentiates into decidua.

In a former paper I discussed Bayer's view, and showed that it was based on insufficient data. The most important recent contribution on this subject is a monograph on the cervix and lower segment by von Franqué of Würzburg. He describes 34 uteri in the Würzburg Museum, 10 from the first six months of pregnancy; 1 from the first, and 5 from the third stage of labour; 9 from the first 24 hours, and 7 from the first week of the puerperium. In addition to his own material he gives a table of all the specimens carefully described in the literature. This comprises 117 uteri from pregnancy, 26 from labour, and 75 from the puerperium. The points noted in this table are the same as in the one I laid before this Society when discussing the same subject—the length of the cervix, and of its vaginal portion; the position of the reflection and of the firm attachment of the peritoneum; the thickness of the wall and the condition of the mucosa with the attachment of the membranes. His conclusions may be thus

summarised. The os internum remains closed during pregnancy unless pains are present, and there is no constant difference between the length of the cervix in primiparæ and multiparæ. The length of the cervix at the various months of gestation varies within certain limits. It grows slightly in length in pregnancy. There is no evidence of its being taken up to form part of the cavity in which the ovum develops. In labour it does not become essentially elongated, the elongation from stretching being counteracted by shortening from dilatation.

The firm attachment of the peritoneum which marks the upper limit of the lower uterine segment rises higher as pregnancy advances. The segment measures from the second to the fourth month 2·3 cm., from the fifth to the sixth 4·1, and from the seventh to the tenth it is about 6 cm. During labour it varies from 3 to 10 cm. in different specimens, according to the stretching of the lower segment.

The relation of the bladder is variable. I do not attach much importance to von Franqué's discussion of this question, as uteri removed from the body are of no value in settling it. He draws attention, however, to one interesting fact, that some six specimens have been described, two of them frozen sections and therefore of great value, in which the bladder is almost completely separated from the uterus, and the peritoneum descended correspondingly deep, coming into relation with the anterior fornix. Two of these specimens were from non-pregnant patients, and its occurrence in pregnancy seems simply to be the persistence in it of an anomalous disposition of the peritoneum found in some patients.

The development of a contraction ring in normal labour, and its presence in anatomical specimens, he considers established by the materials he has collected.

He has never found cervical mucosa extending over the lower uterine segment.

From this necessarily short *résumé* of von Franqué's paper, it will be evident that its value consists not so much in any new facts brought forward, as in its establishing upon a broader anatomical basis what are now the generally received conclusions as to the origin and nature of the lower uterine segment. I have done but scant justice to this important contribution, extending over 120 pages, which is valuable not only on account of the description of its own specimens, but also for its criticism of the conclusions of Bayer, Küstner, and more recently Keilmann, all of whom maintain that this portion of the uterus is cervical in origin.

Leopold, in his discussion of this question, accepts the conclusions come to in von Franqué's paper.

As regards the *attitude and position of the fœtus* we shall select from Leopold's cases those of uterine pregnancy undisturbed by operative interference, reserving for special comment the interesting specimen of a fœtus turned for placenta prævia, but undelivered.

Of nine cases from the sixth month to full time, four are of breech, and five of head presentations. The large proportion of breech cases strikes attention, and it is interesting to note that these are the ones from the earlier months, namely, the sixth, seventh, eighth, and ninth. We must remember that the period of uterine gestation is reckoned according to ten lunar months, so that these figures represent an earlier period than the numbers would suggest from our usual mode of reckoning according to nine calendar months. The five head presentations, on the other hand, are from the end of the ninth, the beginning of the tenth, and three of them from full time. Further, as to the four breech presentations, it is interesting to note that in two of them the diagnosis during life was a vertex presentation, the change to a breech taking place in the agony. Thus in the case of the sixth month, in which the patient died during the night from eclampsia, the fœtus lay with the occiput to the right on the afternoon of admission, but was found with the breech presenting and the back to the left at the post-mortem on the following morning. So in the case from the ninth month, also a case of eclampsia, the child was a vertex presentation with the back to the right before death, while in the frozen section it was a breech with the back to the left. Of the third and fourth cases, which died of eclampsia and heart failure, no history of the condition during life was obtained.

In both of these cases we have then the commonest breech position arising from the second commonest head by the fœtus turning a somersault. Whether breech cases arise often in this way we have no data for determining. If they did, we should expect a right dorsal position to be the more common, as it would be derived from a left head position. The conditions, however, here are so abnormal, the change in presentation taking place at death, that we cannot draw deductions from them.

The effect that the cord may have on the attitude of the fœtus is brought out by these specimens. In Plate viii. the right leg is evidently hitched up by the cord. This disturbance of the attitude has nothing to do with the breech presentation. The latter is purely accidental in this case, as the fœtus was presenting by the vertex some hours before death. It shows, however, as Leopold points out, how the fœtus may come to ride on the umbilical cord. If the right leg slipped down through the loop we should have this condition produced.

In Plate x. the peculiar attitude of the position of the left thigh is undoubtedly due to the loop of the cord thrown round the left leg. Whether this extension of the limbs had to do with the breech presentation we cannot say, as of this case no clinical history was obtained. In the next case it is interesting to note the extension of the legs associated with this presentation. Leopold draws attention to the coil of the cord round the left arm as explaining

the extension of the right leg. It will at least favour its persistence. The extension of the left leg cannot, however, thus be accounted for; and I am more disposed to attribute the extension of the legs here to a primitive peculiarity of the attitude, such as was present in the frozen section of a breech case described by Dr Webster and myself. However produced, the association of a breech presentation with it is of interest.

The turned fœtus is from a case of placenta prævia. The child lay right occipito-posterior. The fingers were pushed up when the os was dilated to the size of a three-mark piece, and the right leg, that is, the leg nearest the sacrum, or the posterior leg pulled down. The patient died a few hours later. The os externum gripped the right thigh just below the nates, so that the fœtus from this point upwards lies within the cervical canal and the uterine cavity. This preparation is very valuable as showing the attitude and shape of the turned child. It shows the graduated wedge which is of value for plugging and dilatation. But at the same time it brings out its weakness where the cervix is very rigid. Leopold draws attention to the fact that where the os externum is rigid and grips the upper part of the thigh the breech does not get down on the placenta so as to compress it and stop bleeding. For this reason he says that in the management of a case like this it would be better treatment to dilate with a bag first, so as to make room for the breech to descend fully, or to be content with rupturing the membranes high up. There is a third procedure which he does not refer to, namely, the pulling down of both legs. Where this is possible it gives an equally graduated wedge.

Another point which he draws attention to in this fœtus is the peculiar way in which the head is twisted on the trunk, the chin being applied to the left shoulder. He attributes this to the fact that the posterior instead of the anterior leg was brought down. In turning he recommends that the anterior leg be laid hold of. If the posterior be brought down the anterior is extended and hitches on the pubes, and the fœtus can only be delivered by the trunk rotating so as to carry the extended leg towards the sacrum and allowing the pulled down leg to slip out under the pubic arch. It is this screwing round of the trunk which has twisted it on the head. When the anterior leg is brought down you have of course the continuous plane surface of the drawn down thigh and back in relation to the pubes, and therefore the trunk will slip out without rotation, which has here given it the screw on the head.

It is interesting to compare this section of Leopold's with that of Zweifel's on a similar case. In Zweifel's preparation the head is not twisted on the trunk, but no reference is made in the clinical history to the child before turning, so that it throws no light upon the correctness of Leopold's interpretation of his specimen. In Zweifel's case the fœtus has been drawn down further

than in Leopold's. The most instructive point, however, in the comparison is the condition of the cervix. In Leopold's we have a cervical canal measuring posteriorly 3·5, anteriorly 4 cm., that is, 1·4 and 1·6 inches, while in Zweifel's, if we place the os internum where he places it, the cervix is just double this length. This seems an additional reason for placing the os internum in Zweifel's preparation at a lower point than he does. Although the cervix is more fully taken up in Zweifel's case than in Leopold's, as is evident from its relatively increased thinning and the obliteration of the fornices, it is difficult to see how it could become elongated to double the length, especially in a case where there had not been any resistance to the expulsion of the contents, and the labour had not gone on for a long time. In Zweifel's case the cervix, when the patient was taken into the hospital, only admitted the finger. A bag was introduced evidently into the vagina, and on its removal the cervix was dilated with the hand. These preparations are both of great value as showing the relations of the fœtus in the act of being turned. In Leopold's case the breech of the child is transverse, its pelvis lying in the same direction as the mother's; while in Zweifel's it is antero-posterior.

Of the five cases of head presentation, only three are reproduced so as to show the attitude of the child. These are—from a normal pelvis, a slightly contracted justo-minor, and a flat rickety pelvis. Putting the fœtuses from these three cases side by side, we are struck by the fact that while those from the latter two resemble in the length of the fœtal ovoid and the disposition of the limbs other fœtuses taken from full-time pregnancy in the first stage of labour, the third resembles one taken from the second stage. The length of the ovoid is 11¼ inches as against 10 and 10¼. A glance at the drawing shows that this is not due to the fœtus being larger, but to a slight undoing of the flexion attitude of pregnancy. Leopold draws attention to this elongation of the fœtus, and compares his section to Chiari's one of the second stage. If this comparison were valid, then we should have the fœtus before labour showing the same attitude that it does during the second stage; and should not be right in regarding this extension as a second stage phenomenon, as I did in a former paper. Another explanation may, however, be given of the peculiarity of the fœtus in this case. The uterus was removed from the body before freezing, and a glance at the frozen section shows that its value as giving data for clinical work is thereby greatly lessened. In fact, comparing this uterus with other frozen sections, we see that it is a uterus frozen on a board and not in an abdomen. A fœtus treated thus would naturally become flattened out, all the more if it had been previously dead some time in utero, as this fœtus was.

In the case of the justo-minor pelvis Leopold draws attention to the fact that the occiput of the child looked directly to the left, while the back was to the left and front, and says that this section

raises the question whether the trunk or the head rotates first. The more transverse position of the head may be here quite well due, as he suggests, to there being more room in the transverse diameter of the pelvis, and the head in engaging may have occupied this diameter while the back lay as yet unrotated to the front and left. I do not see, however, as his remarks seem to imply, that this section suggests that the trunk was transverse at first, and has begun to turn forwards before the head. The more natural explanation is, that the head is twisted backwards on the shoulders. The child's neck is so flexible that slight deviations from the normal attitude easily occur. This flexibility of the neck is an *a priori* argument against any theory that accounts for internal rotation by a movement of the trunk. The evidence from sectional anatomy, so far as it goes, is all in the line of making internal rotation a movement primarily of the head, and determined by the form of the pelvis as modified by the soft parts.

The bend on the fœtus at the neck in this case is peculiar, causing the head to drop on the shoulder. It is present in Schroeder's section and my own also from the first stage, and in a former paper I attributed it to the fact that the child was dead *in utero* in both these preparations, and therefore limp. In this case of Leopold's the fœtus also was dead before labour, and I am inclined to regard the bending of the head on the shoulder to the extent we see it here as a pathological phenomenon. It is not due to a moulding of the fœtus on the promontory, as the direction of the angle differed in Schrœder's case and my own.

In the section of the rickety pelvis, which had a conjugata vera of 3 inches, the relation of the head to the brim so as to produce a posterior parietal bone presentation is very well shown, and also the large proportion of forewaters which forms when the fœtal head is kept out of the lower uterine segment. The sagittal suture is near the symphysis, and the posterior parietal bone is more prominent. It is noteworthy that the head is not extended, as is evident from the position of the anterior fontanelle. This section is of great value, as it is the only one we have from a markedly flattened pelvis.

Dr J. W. Ballantyne thought that Leopold's sections, which had been so clearly demonstrated to them by Dr Barbour, showed clearly that the attitude of flexion of the fœtus in utero was not so hard and fast a rule as had been commonly supposed. He recollected one case in which version had been rendered very difficult by dorsal flexion of the lower limbs. The drawings of descent of one leg in placenta prævia seemed to show that the wedge so formed was not a very good one for dilatation.

VIII. NOTE ON THREE ADDITIONAL CASES OF CONGENITAL TEETH.

By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E.

In March, 1896, I communicated to the Edinburgh Obstetrical Society the records of three cases of congenital teeth, and considered at some length the clinical history and causation of this dental anomaly. Since then I have received details of three additional instances of congenital teeth, all of which present features of special interest.

Case I.—*Congenital Teeth: Face Presentation.*

In November, 1896, I received from Dr W. R. Martine of Haddington the following record of a case of congenital teeth which had occurred in his practice. The mother of the tooth-bearing infant was a multipara, and the present pregnancy was noteworthy only for the fact that during it she had nursed six cases of scarlet fever in her house. Dr Martine found some difficulty in diagnosing the presentation on account of the presence of two hard ridges which he at first thought must be the nostrils, but which afterwards turned out to be the congenital teeth. It was a face presentation: position, L.M.A. The infant, a male, was born without artificial aid; in addition to the dental peculiarity he was born with a caul.

The congenital teeth were the upper central incisors. One was well and the other poorly developed at the time of birth. The boy is now (March 1898) sixteen months old, large and well developed. He has eight teeth in all (upper and lower incisors), including the two present at birth, which have remained and show every indication of remaining. They are particularly well-developed teeth, larger in size than the ordinary ones. He has always been healthy save for an attack of hæmorrhagic measles, during the onset of which he had one fit. He was a bottle baby.

Remarks.—This case presents several features of interest. There is, for instance, the coincidence of congenital teeth and a face case. Face presentations are rare, congenital teeth are much rarer; the occurrence of the two in combination must be one of the rarest of obstetrical phenomena. Again, there is the interest of the after-history. The two congenital incisors did not drop out and did not require removal, but remained as the representatives of the milk teeth, the other incisors growing in round them. The fact that the infant was bottle fed probably prevented the occurrence of difficulty with the teeth, for in breast-babies they have given rise to wounds of the maternal nipples. Finally, it is noteworthy that the teeth were well formed and not the mere shells of discoloured dentine which have been met with in other recorded cases.

CASE II.—*Congenital Teeth: Alveolar Necrosis.*

For the record of the second case of congenital teeth I am indebted to Dr W. Atkinson Wood of South Yarra, Melbourne. In a letter from him which I received in the end of November, 1896, he mentions a case of this dental anomaly in which the teeth eventually sloughed out, the alveolar process became necrosed, and the child died.

Remarks.—The interest of this case rests in its fatal termination. In the absence of further details it is rash to conclude that the fatal issue was certainly due to the presence of the teeth. In the clinical records which I gathered together in my previous paper on this subject there is none exactly resembling Dr Wood's case. Deaths there have been, usually from infantile atrophy, diarrhœa, and pneumonia, and in one instance from hæmorrhage following the extraction of the teeth; but the case under consideration seems to have been quite peculiar in the cause of the fatal termination.

CASE III.

The third case of congenital teeth was reported to me by Dr H. H. Oldright of Toronto, in whose practice it occurred in the spring of last year (1897). The notes which Dr Oldright kindly sent to me are as follow:—

The father of the tooth-carrying infant was an intelligent, strong, and healthy man, of Irish descent. He had syphilis when in the army in Afghanistan twelve years ago; for this he was treated for two years with iodide of potash, and has had no later manifestations. The mother, also Irish, was somewhat anæmic. She is free from syphilis. She had one child nine years ago, which suffered from eruptions and died of marasmus. The present pregnancy, which was complicated by leucorrhœa, terminated on February 17, 1897, in the birth of a male infant weighing 7 lbs. On February 18, Dr Oldright found that the two lower central incisors were already cut. They were movable in their sockets, and the alveolar process for about $\frac{3}{4}$ inch was elevated $\frac{3}{8}$ inch above the level of the gums on either side and was also movable, rocking backwards and forwards. Below this hinge process was an exostosis in the middle line of the symphysis menti, which disappeared later. As the mobility and elevation afterwards disappearod, the teeth at the same time became fixed in their sockets. The mother's nipple was wounded before the teeth were discovered, and in spite of antiseptic treatment and the nipple-shield, an abscess formed which was opened on March 4, two weeks after the inoculation. The abscess was curetted, and healed in eight days. This, of course, necessitated the weaning of the child. A few days after birth the child developed a pemphigus, which disappeared under treatment with boracic acid lotion. At six weeks he developed 'snuffles' and a marked papular eruption; both of these disappeared under mercury. At

the same time the congenital teeth became soft and gelatinous and Dr Oldright removed them with his finger-nail. Under the microscope the typical dental structure could be recognised. The roots seem to have been invaded by granulation tissue, and were not removed. At the age of six months two new (?) teeth could be seen and felt in the place of the first. Dr Oldright is inclined to regard these as due to a layer of fibrous tissue or exudation over the old roots, but the mother states that there were new crowns. The child is now eleven months old, and the roots are filled with granulation tissue level with the gum. No other teeth have been cut. Quite recently there was a return of the syphilitic symptoms (papular rash, snuffles, etc.); under mercury and iodide of potash these have subsided.

Remarks.

Dr Oldright's case presents several features of interest. The association of infantile syphilis seems to have been well established, and probably was the cause of the degeneration which took place in the teeth. The curious hinged and elevated alveolar process, and also the exostosis, may be ascribed possibly to the same cause. On the other hand, it may be that, as was the case in Dr Vargas' specimen,[1] the process was really an extra-alevolar dental sac containing two *supernumerary* as well as *congenital* teeth. The later history of the case may possibly throw light upon this question.

I have recently so fully discussed the various problems suggested by the occurrence of congenital teeth that I shall not here consider any of them again. I shall content myself with recapitulating the special points of interest in the three cases now passed under review. These are the unusual, probably unique, association of congenital teeth and a face presentation in the first case; the fatal issue brought about apparently by the sloughing out of the teeth and subsequent alveolar necrosis in the second instance; and the syphilitic manifestations and possible supernumerary nature of the teeth and their sac in the example recorded by Dr Oldright.

Dr Ferguson was much interested in Dr Ballantyne's paper. He had at present under observation two cases of congenital teeth, and curiously enough they occurred in two almost consecutive labours. In both cases the erupted teeth were the two lower central incisors. In one case the teeth were soft, and became almost pultaceous in consistence. They quickly wore down to the level of the gum, and no other milk teeth developed to take their place. In the other case the teeth were normal and healthy, and persisted along with the other milk teeth, from which they cannot now be distinguished. No interference with the teeth was required in either of these cases. The child with the soft teeth was artificially fed, the other was breast fed, but the teeth caused no inconvenience to the mother.

[1] *Vide* my paper in *Edin. Med. Journ.*, May 1896.

MEETING VI.—MAY 11, 1898.

Dr R. MILNE MURRAY, *Vice-President, in the Chair.*

I. Harold Malcolmson, M.B. C.M. Edin., Holywood, County Down, was duly elected an Ordinary Fellow of the Society.

II. *Dr J. L. Lackie* showed (for the *President*)—(1.) A MYOMA OF THE OVARY, which at first sight had all the appearances of a sarcoma, but there were no adhesions and no ascites. The tumour was easily removed, and the patient did well. (2.) A LARGE DERMOID OVARIAN removed from a girl of 16. It at first was supposed to be malignant, and the abdomen was frequently tapped for ascites. Ultimately laparotomy was performed with a most satisfactory result. (3.) A FIBROID, removed by myomectomy, which was necessary in order to reach the ovaries, oöphorectomy being the object of the operation. The patient had done well. (4.) A LARGE FIBROID, removed by abdominal hysterectomy. The patient died. She had been much reduced by hæmorrhage.

III. *Dr Brewis* showed a FOUR MONTHS' PREGNANT UTERUS and LARGE FIBROMYOMATOUS TUMOUR, removed by hysterectomy.

IV. *Dr Jardine*, Glasgow, showed—(*a.*) TWO UTERI from cases of Cæsarean section; and (*b.*) a DRAWING of a CURIOUS CENTRAL TEAR OF THE PERINEUM.

V. *Dr R. C. Buist* showed a SPECIMEN OF MALIGNANT ADENOMA OF FUNDUS UTERI. The notes of the case were: Mrs M. (52), widow; eighteen months after menopause, at 50 she had a return of bloody discharge, and after it had come irregularly for six months, she consulted Mr Greig, who curretted. I found on microscopic examination of the scrapings that they were from a malignant adenoma. In August last I removed the uterus and appendages per vaginam by ligature. The convalescence was complicated by a transient cystitis and by a megrim headache, but the patient was able to be up on the twelfth day, and is well. The specimen shows a circumscribed prominence of irregular papillary appearance, and about a centimetre high, growing from the upper part of the anterior wall of the fundus. The microscopic examination coincided with that of the scrapings.

VI. *Dr Haultain* showed a specimen of TUBAL GESTATION.

VII. *Dr J. Haig Ferguson* showed two SPECIMENS OF TUBAL GESTATION, removed from the same patient at one operation, the one a mesometric sac, the other a lithopædion. The patient from whom the specimens were removed is a married woman, aged 29 years. Her first child was born in May 1891. It was a cross-birth, and

only survived one hour. A second child was born at the seventh month in February 1892, and likewise only survived one hour. After that her menstruation was quite regular till January 1894, when she had sudden amenorrhœa, and had missed four periods, when she was seized with violent abdominal pain and shivering. At that time she resided in Ireland. There is no history of discharge of bloodclot or membrane of any kind. For these symptoms she was treated with poultices by her medical attendant, and was confined to bed for several weeks. The periods then returned as usual, and she was quite regular till February 1898, when she again missed two periods. Dr D. J. Graham has kindly furnished these notes of the patient's history.

Dr Ferguson saw the patient first on 11th April 1898; she was then suffering from pelvic pain and retention of urine. On examination a fluctuating tender swelling the size of a goose egg was found on the left side; the uterus was enlarged and pushed to the right side. A small piece of decidual membrane was passed per vaginam, in which typical decidual cells were seen microscopically. Left tubal pregnancy was diagnosed, and Dr Ferguson thought it probable that it had ruptured into the mesometrium, thus setting up the sudden attack of retention of urine. The retention, however, did not last long. On the 19th April Dr Ferguson performed abdominal section for the purpose of removing the gestation sac. It was comparatively easily removed, and just as it was touched by the fingers the mesometrium ruptured, but the hæmorrhage was soon controlled, and the sac was removed along with the corresponding ovary. On the right side an irregular nodulated swelling was discovered, attached by a narrow pedicle (close to the cornu of the uterus) to a very much dilated and tortuous tube, which was adherent to the uterine fundus. The tube closely resembled small intestine in appearance, and was filled with serum. This sac was the lithopædion, and was filled with the bones of a four months' fœtus. The lithopædion lay in the peritoneal cavity, attached to the tube by its narrow pedicle, looking as if it had been originally extruded through the peritoneal covering of the tube. The right ovary was cystic, and was removed at the same time. The patient has made an uneventful recovery.

VIII. RECENT MODIFICATIONS OF ANTERIOR COLPORRHAPHY—CASE OPERATED ON FOR CYSTOCELE REMAINING AFTER VAGINAL HYSTERECTOMY.

By R. C. Buist, M.D.

For completeness sake it is needful to mention here a few facts which are well known to all gynecologists. The earlier discussion as to the mechanism of cases of prolapse has resulted in the general recognition of the two large groups of cases: (1) Cases with an initial retroversion or retroflexion; (2) Cases with initial weakness

of the pelvic floor and cystocele. Cystocele implies the existence of weakness, not only of the pelvic floor, but also of the muscular wall of the bladder. The normal bladder can empty itself in virtue of its intrinsic contraction in whatever position the body may be. In cystocele this power no longer remains, and unless the patient adopt special means the bladder is never entirely emptied and the bladder wall is thus never fully contracted. The vicious circle is thus closed, the impairment of the muscle prevents complete evacuation of the bladder, the incomplete evacuation of the bladder prevents the restoration of the muscle. From this point of view, the obliteration of the cystocele is an important factor in the success of any treatment of prolapse.

The fact that scar tissue is weak tissue is one of the most important elements in the failure of operations for prolapse of the female genital organs, and in many ways the process of devising new operations has been one long endeavour to get rid of this weakness or to ensure that the scar or line of greatest weakness should not coincide with the line of greatest strain.

Fehling replaced the excision of a median flap from the anterior wall of the vagina by the excision of two lateral flaps. More recently an endeavour has been made to replace the line of scar by a new median raphe or fillet, as in the operations described by Gersuny, and at the International Medical Congress in Moscow by Marsi. Theilhaber of Munich has shifted the venue somewhat when he says that by excising the whole anterior and lateral walls of the vagina he supports the cystocele, not from the lax tissue underlying the vagina, but from the unyielding attachment of the lateral tissues of the vagina to the pelvic bones.

The last three years have seen various proposals made, not for the support, but for the obliteration of the cystocele. Theilhaber suggests that, if necessary, excision of the posterior wall of the bladder, or at least of its muscular layer, might be practised, and argues that from the old method of performing anterior colporrhaphy by pulling forward the vaginal mucous membrane with forceps, the success of some of the older operators was probably due to involuntary excisions of this redundant layer. Winter, Lejars, and Pasteau have each proposed to stitch the lax bladder together in folds separately from the treatment of the vaginal wall, from which Winter excises a longitudinal median flap. V. Arx has made a similar proposal, but unites it with what may be considered a modification of vaginal fixation of the uterus.

Thevariations of these operative methods will be most easily seen from the series of diagrams which I have prepared. In the interpretation of these diagrams it is important to note that if the muscle of the bladder wall be incapable of full contraction it will at first, at any rate, simply lie in wrinkles round the circumference of the less deep but still present dip of the cystocele.

In September 1897 I had occasion to operate for cystocele on a

patient whose history is of considerable gynecological interest. Mrs A., aged 52, had had six children and four miscarriages, these latter being all about the third month. Her deliveries were always spontaneous, the first five being attended by a midwife only. Since the first she has had some prolapse.

Menopause occurred at 45, and at 49 some ill-smelling irregular bloody discharge set in. The bladder symptoms misled a surgeon who was consulted to assume that the bladder was involved in malignant disease, and he declined to operate. The patient was then fortunately put under the care of Dr Barbour, who in September 1895 amputated the cervix for epithelioma. During the next year she suffered so much from pelvic pain that she desired further operation for the enlarged cystic ovaries which she was found to have. This was not, of course, a result of the previous operation. Her attendant and the surgeon who had been called in consultation resolved upon, and made all the arrangements for, total extirpation, but the night before the operation the surgeon telephoned to me that owing to an accident he would be unable to operate, and asked me to do so. Though the patient had previously had trouble from the cystocele, and, in particular, was unable to empty her bladder unless she leaned forward, I thought it better to perform a simple extirpation, which I did by ligature. This was in September 1896. The patient recovered well, and I may add that microscopical examination of the cervical stump showed no sign of recurrence of the epithelioma. Some months later the patient had a little bloody discharge, which I found to be due to a mass of granulation tissue round one of the ligatures on the left, and which stopped on the removal of this. At the same time she complained of discomfort, due to the cystocele which had not been affected by the previous operations. In the beginning of September 1897 I made on the anterior vaginal wall a mesial incision, extending from the urethra to the fundus of the vagina, dissected on each side between the vagina and the bladder with the handle of the knife, stitched the loose bladder wall together in folds with chromic gut, and then shortened the anterior vaginal wall by bringing the two ends of my longitudinal incision together, so that it became transverse, and stitching it up in that position. This leaves a little redundant tissue at the sides of the vagina, which may be trimmed or not, according to the taste of the surgeon. Apart from this there is no excision of tissue in the operation. As the vulvar cleft was rather long I then carried the knife round the posterior part of the aperture, splitting as in Tait's operation. The result is, up to the present, completely satisfactory.

Among the other points of interest in the case we may note that the amputation of the cervix and afterwards the total removal of the uterus and its annexa did not cure the cystocele, though there was no doubt as to the efficient attachment of the vaginal wall to the broad ligament.

CYSTOCELE ELEVATION.

FIG. 8.—v. Arx.

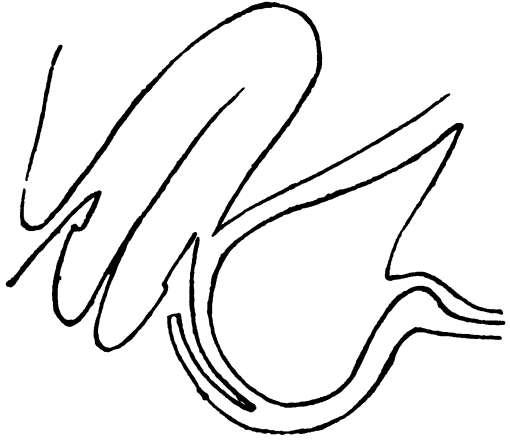
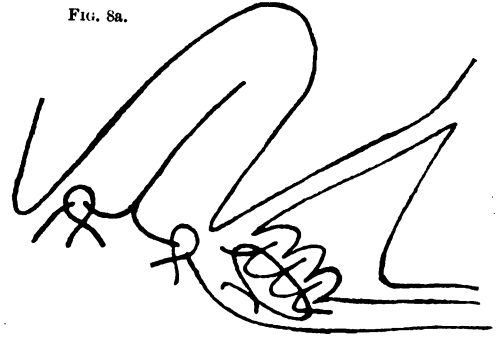


FIG. 8a.



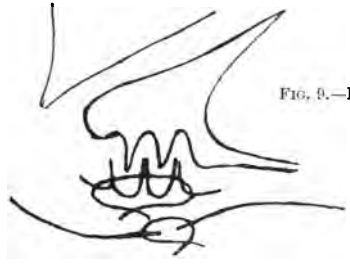


FIG. 9.—Buist.

It is as yet too early to speak from experience of the results of these various methods. Theilhaber gives an account of most of the published statistics, and states that he himself had, since adopting his new method fully two years before, had no return of the prolapse, and that he had never yet thought it necessary to excise part of the bladder wall. In the three cases published by v. Arx he also claims success. The application of general mechanical principles to the various operations is evident from the diagrams, and other circumstances being alike would lead us to consider the proposal to aim at filling up the pouch of the cystocele as a distinct advance in the operative treatment of these cases.

It has, of course, been foreign to my purpose in this paper to consider the relative claims of operative or non-operative treatment, and also the importance of the comparative skill of the surgeon as an element in the success of either.

GERSUNY.—*Centralb. f. Gyn.*, 1897.
MARSI.—*Monatssch. f. Geburtsh. u. Gyn.*, 1897, vi. 413.
THEILHABER.—*Monatssch. f. Geburtsh. u. Gyn.*, 1897, v. 488.
WINTER.—*Festschrift zu Carl Ruge*, 1896.
LEJARS.—*Gaz. Med. de Paris*, 1894, p. 361.
V. ARX.—*Corresp. f. Schweiz. Aertze*, 1896, xxvi. 402.

Figures 1, 2, 8, 8A, and 9 are sagittal sections.
" 3A, 4, 6, and 6A are transverse sections of the anterior vaginal wall.
" 5 and 5A are transverse sections of the anterior and posterior vaginal walls.

Professor Simpson thought that the various procedures were intended to bring about obliteration of the cystocele by contracting in the various ways the anterior vaginal wall. Dr Buist's paper was very interesting, and the process he had adopted in the case recorded was very ingenious. He (Professor Simpson) had got satisfactory results in a series of cases by removal of a lemon-shaped portion of the vaginal mucous membrane, and bringing the raw surfaces together by a series of sutures usually applied in these stages. In patients where the mischief started in a defective perineum, this anterior colporrhaphy, conjoined with perineorrhaphy, usually resulted in a cure of the condition. In a suitable case he would be disposed to adopt the procedure described and illustrated by Dr Buist, and the Society would be indebted to him for his valuable communication.

Dr Barbour said he did not attach much importance to the folding of the wall of the bladder, although all modifications in colporrhaphy were of interest. He usually dissected back the vaginal mucosa on either side from a mesial incision, and brought the vaginal flaps into apposition, without removing much tissue. The wall of the bladder was necessarily puckered in.

Dr Buist, in reply, said that the statements of the text-books as to the frequent recurrence of prolapse after operation, and the continual devising new operations, led him to review the methods with reference to the special case he had under consideration. The tucking-in of the bladder wall was not, of course, a device of his, though he adopted it and thought it an important advance in the treatment of the cases which had been liable to recur, as it seemed that there was no pouch with residual urine when the bladder was emptied.

IX. TOXÆMIA IN PREGNANCY, WITH ILLUSTRATIVE CASES.

By J. A. Campbell Kynoch, M.B., F.R.C.P. Edin., Dundee.

By toxæmia in pregnancy is generally understood that condition occurring in the pregnant state as the result of the presence in excess of toxic material. Its origin has not been elucidated, but as far as is known the character of the poison or poisons produced in the body of mother and fœtus is of the nature of alkaloids.

The excretion of the excess of waste material being in large part effected through the kidneys, attention has been chiefly directed to those cases where kidney failure was the most prominent symptom. Thus the albuminuria of pregnancy, generally accounted for as the result of mechanical pressure or reflex spasms of the renal arteries, may be the result of toxæmia.

Clifford Albutt finds evidence for the presence of a toxin in pregnancy from the fact that healthy urine contains toxic material, and he refers to the experiments of Bouchard, who found that when such urine was injected into animals symptoms ending in coma were produced. The nature of this poison is unknown. Bouchard ascertained that it was not urea, as, in order to produce a fatal result, more of this substance was necessary than the amount present in the urine injected, and likewise the amount of potash salts present was insufficient to cause the effects produced.

Many obstetricians now believe that the theories which have been already advanced to explain the occurrence of eclampsia do not sufficiently cover all cases, and they accept as a substitute the toxæmic theory. They regard the convulsions as arising from the action on the nerve centres of a poison which is the result of tissue metabolism elaborated partly by the mother and partly by the fœtus.

Chambrelent's experiments, proving the increased toxicity of the blood in patients showing eclamptic symptoms and the diminished mortality as the result of treatment based upon the acceptance of this theory, are all in favour of its correctness. The bacteriological researches of Délore, Doléris, Blanc and Gerdes, all point to the same conclusion. Gerdes finds evidence for the presence of a bacillus as the cause of embolic hæmorrhage

in the liver, lungs, and other organs from a fatal case. Lindermann has recorded in detail the post-mortem appearances from a case of fatal vomiting in pregnancy, in which he found neuritis in several nerves with fatty degeneration of the liver and kidneys in both mother and fœtus. The spleen was considerably enlarged, thus differing from that found in cases of death from inanition proper, where atrophy of this organ is regarded as pathognomonic of this condition. From these appearances Lindermann believes that the vomiting in this case was due to auto-intoxication and not to nerve reflex.

According to Bouchard, normal urine contains a toxin, having sialagogue properties. This he found more abundant in the blood, muscles, and liver, from which fact he supposes that it is from the blood that the kidney receives the substance which produces salivation. Hence the salivation so frequent in early pregnancy has been regarded by some as the consequence of the presence in excess of this poison.

Toxins absorbed from the bowel may be rendered harmless by the protective influence of the liver; but if this influence be lost, the result of change in the liver substance, or the excess of toxins absorbed, symptoms of poisoning are produced.

The three following cases are, I think, of interest as bearing upon this subject. Mrs A., 34 years of age, had four children, no miscarriages, all labours normal and non-instrumental. During each pregnancy she was troubled with vomiting, which generally ceased about the fourth month. When seen by me for the first time she was about seven months pregnant. She stated that during her pregnancy she had been well, except for what she called the usual morning vomitings. For some days previous she had complained of headache, but was able to go about. She complained further of a smothering sensatian with pain between her shoulders. She was vomiting bilious matter, tongue thickly coated, breath very offensive, fœtal heart sounds distinct, no signs of labour. As the bowels had not moved for two days she was ordered six grains of calomel. On the following morning she was prematurely confined of a dead child corresponding to the seventh month. The bowels moved freely with the calomel, and there had been further vomiting of bilious matter. She was in a very drowsy condition; temperature normal, pulse 120—weak; no jaundice, slight increase of hepatic dulness, with some abdominal dulness; spleen not palpable. Patient answered questions fairly intelligently, but appeared to be getting deaf. She took abundance of milk; no further vomiting; bowels moved three times, dark and offensive; urine abundant, specific 1020, acid in reaction; no albumen. She was ordered five grains of salol every four hours. On the following day she was very restless, with occasional attacks of vomiting; bowels loose, tarry in appearance; drowsy condition increased. She was then put upon naphtalin three

times a day, but showed no signs of improvement, and died comatose six days after confinement.

At the post-mortem the liver was found large and fatty, weighing over three pounds, kidneys large and pale, spleen enlarged; the intestinal tract was deeply congested and hæmorrhagic throughout its whole course; uterus and appendages normal. Microscopically there was found a moderate amount of fatty degeneration at the periphery of the lobules. The kidneys, beyond congestion of the vessels, showed no signs of old or recent disease. Abundant bacilli were found in the mucous lining of the intestine, and some cocci.

I think two interpretations may be given to this case—either, first, that as the consequences of excess of toxines produced in the intestinal tract, the fatty degenerated liver was unable to neutralise them and prevent their entrance into the circulation, with the result that the patient rapidly became comatose; or, secondly, that the condition was one of acute yellow atrophy of the liver in the early stage, death taking place before that organ had time to show the characteristic appearances of that change.

The second case is as follows:—

Mrs O., 30 years of age, was admitted into the Dundee Royal Infirmary on 13th September 1897. She had had four children, first, ten years ago; second, seven years ago; third, five years ago; fourth, four years ago; and was now pregnant for the fifth time, at the fourth month. At the beginning of her third pregnancy, patient complained of a skin eruption on the thighs and arms, accompanied with great itchiness, which disappeared soon after her confinement. Again at the beginning of her fourth pregnancy she had a similar attack of skin disease, disappearing after delivery. She now, on her admission to the Infirmary, complained of great itchiness in legs and arms, and there were noticed on the back of her hands and front forearm, patches of dermatitis shaped like round discs, ranging in size up to that of a florin, vesicular and pustular, with crust formation in some parts. On the inner side of right leg and front of left thigh there were similar patches varying in size. The itching was intolerable. Examination of other symptoms negative; uterus reached as high as two inches below the umbilicus. Her temperature during her residence in the Infirmary was normal. On account of the syphiloidal appearance in places, she was put upon ung. hydrarg. ammoniat., with, internally, five grains of iodide of potash and one drachm of liq. hydrarg. perchlor., three times daily. This was continued until the gums showed signs of tenderness, but as this treatment had no effect on the rash it was discontinued. She continued under my observation as an out-patient during the remaining months of her pregnancy, during which time the itching was relieved by carbolic preparations, but there was little or no effect produced upon the eruption by the action of various

dressings, such as boracic and starch. I saw her three weeks before confinement, when the condition of arms and legs was much the same as on her admission to the Infirmary.

I again saw her one month after her confinement, when I found the eruption had completely disappeared, and in its place were brown pigment spots. This would appear to be a case of dermatitis herpetiformis (or herpes gestationis), on account of, first, the polymorphous condition of the eruption, in parts pustular and vescicular; secondly, of the prurigo; thirdly, on account of successive attacks in three pregnancies; and, fourthly, disappearance after confinement. Its etiology is obscure, and appears to attack presumably healthy as well as debilitated women. Two opinions are given as to its origin—first, that it is a neurosis, or secondly, due to auto-intoxication by leucomaines or alkaloids. Thus Duhring says:—'Pregnancy, by causing nephritis, predisposes to dermatitis herpetiformis, which is due to a toxin in the blood.' Several such cases have been recorded. Arozan mentions a case of a woman who in two successive pregnancies suffered from prurigo with papular vescicular eruption, disappearing soon after delivery.

The third case is as follows:—

Mrs J., 26 years of age, was admitted into the Dundee Royal Infirmary complaining of headache and feverishness. There was no history of alcoholism or hereditary tendency to insanity. She had been delivered five days previously at the seventh month, and was said to be delirious on the evening before admission. She was found jaundiced, tongue furred; bowels had not moved for three days; pelvic examination negative, as was that of the other systems. On the night after admission she became very excited, refused to take nourishment, calling out from time to time that the nurse was not treating her properly, and she was with difficulty kept in bed; eyes wild and staring, and she presented all the appearances of acute mania. The urine, specific, 1022, acid, no albumen; pulse 60, temperature 100°. She was ordered pill hydrarg. 2½ grains, but as this had no effect, she got a mixture containing mag. carb. gr. x., mag. sulph. ʒii. She continued for some hours in this condition of mania, and after free motion of bowels she still complained of headache. On the following day the symptoms of mania had completely disappeared, and she continued quiet and reasonable during the remainder of her stay in the hospital. The jaundice lasted for about ten days, but it disappeared a fortnight after admission.

The exciting cause of many cases of puerperal insanity is found to be of toxic origin, not necessarily derived from the uterus and the result of septic endometritis, for it may result from defective action of any of the excretionary organs; for example, the liver or intestine.

Further, the toxicity of the blood developed during pregnancy

does not disappear for some weeks after confinement, during which time there is an excess of waste material to be eliminated from the system. Defective elimination, therefore, by the kidney or intestine is of importance in the production of toxic effects. The disappearance of the maniacal symptoms in this case after free purgation points, I think, to the mental condition being the result of toxæmia from defective intestinal elimination.

Professor Simpson thought it important to have such cases recorded as those with which Dr Kynoch had favoured them to-night, both because they were of rare occurrence and difficult of explanation. In regard to the first case he (Prof. Simpson) was disposed to think that Dr Kynoch was correct in referring it to an acute yellow atrophy. In the skin eruption case it seemed most probable that the symptoms were traceable to blood conditions, and in all the group of cases it was, no doubt, of the greatest importance to secure good elimination through the emunctories. Gooch had indicated the value of purgation in cases of mental disturbance, and as the maternal organs had to serve for elimination of fœtal waste products, any inadequacy of their action led to disturbance of the chemistry of the blood. Dr Kynoch's cases would help to throw light on obscure conditions.

Dr Church referred to the importance of carefully dieting the patient in pregnancy as a safeguard against toxæmic conditions. For instance, a largely milk diet, and the avoidance of tea and butcher meat, might hinder the recurrence of uræmic convulsions in subsequent pregnancies. He related the case of a lady who had lived on nothing but milk during the whole period of gestation with the best results.

Dr Barbour thought that many cases of albuminuria could be explained by the presence of toxæmia. He referred to a case in which it had developed in the early months of pregnancy. The patient was said to have had convulsions on two occasions as early as the third month. There was enlargement of the cervical glands on the left side, which the patient said always occurred when she was pregnant. The patient was admitted to the Maternity Hospital a month ago with similar symptoms on a supposition that she was again pregnant; but examination showed that the uterus was not enlarged, so that on this occasion albuminuria and glandular enlargement had developed apart from pregnancy.

Dr R. C. Buist said the Society was to be congratulated in having recorded cases of such interest as Dr Kynoch's. About four years ago, in spite of its rarity, five cases of acute atrophy of the liver occurred in Dundee, and having the opportunity of examining the liver of three, and the kidney of two, he had occasion to review the whole literature of the subject. He found that in many cases the diagnosis had been doubted, because there

was no diminution of the liver; the identity of the microscopic lesions in such cases, and in those more advanced, pointed to the conclusion that the diminution was only a terminal condition, and there need thus be no hesitation in accepting Dr Kynoch's first case as one of this condition. They had at present, perhaps, no good alternative to the term toxæmia of pregnancy for these cases, but one could not avoid the impression that this was at present an *omnium gatherum*, which explained everything, and at the same time explained nothing. They were probably on the threshold of a series of investigations which would again individualise the conditions pathologically as well as they were now separable clinically.

X. NOTES ON FOUR CASES OF CÆSAREAN SECTION.

By Robert Jardine, M.D. Edin., M.R.C.S. Eng., F.F.P. & S. Glasg.; Physician to the Glasgow Maternity Hospital.

The operation of Cæsarean section has now become so common that it may be said to be displacing craniotomy to a certain extent. It is a mistake, however, to imagine that it will ultimately take the place of craniotomy, as there will always be a large number of cases in which, for various reasons, the destructive operation will be selected. For one reason, many men will feel themselves better able to do a craniotomy than a Cæsarean section. I have done four of the latter within the last few months, and a large number of craniotomies within the last few years, and I must say that for ease to myself I prefer doing the section. Performing craniotomy on a living child has always seemed to me a somewhat gruesome proceeding, and one not to be lightly undertaken. The interests of the mother, of course, are paramount, but the unborn babe too has some claims for consideration.

I shall now give notes of four cases in which there are some points of interest.

Case I.—A. A., i-para, æt. 22, single; admitted to the Glasgow Maternity Hospital 19th August 1897; sent in by Dr Peter Buchanan. She had been in labour for some time. The os was the size of half-a-crown, and the membranes were unruptured. The head was free above the brim. She was rickety, but not markedly so, except in the pelvis, which had a diagonal conjugate of about 3 in. The promontory projected very sharply forwards. Drs Black and Oliphant both agreed that it was a suitable case for Cæsarean section.

Assisted by Drs Black and Oliphant I operated in the usual way. Bleeding from the uterus was controlled by Cameron's method of firmly pressing a pessary down on it. By this method you can dissect down slowly until the membranes bulge into the wound. The wound can then be enlarged to the full size of the pessary with practically no loss of blood. The pessary is

quickly removed, and the incision enlarged sufficiently to extract the child. As I passed my hand into the uterus an arm presented, but I grasped the feet, and quickly turned the child out. The child, a female, was alive, but like all these children had to be resuscitated. The uterus was firmly grasped by Dr Black, and the placenta was quickly expelled.

Just as I commenced putting in the uterine sutures the patient stopped breathing, and we had to do artificial respiration, and have the foot of the table raised. From eighteen to twenty No. 10 silk sutures were put in, including the muscular and serous coats only. A few superficial catgut ones were also used. I then tied the tubes in two places and divided them, thus sterilising her effectually. The abdomen was closed and dressed in the usual way. As regards her convalescence it was uneventful and never gave us a moment's anxiety. On the twenty-first day the discharge became red again, evidently menstrual, and this continued for eight days. A curious thing about the baby was that she too had a bloody discharge from the vagina when she was five days old. I examined her myself, and saw the discharge coming through the hymeneal opening. I sent a note of this to the *British Medical Journal*, which provoked a short correspondence. One man answered that 40 per cent. of female children had this sanguineous discharge. I have seen it once or twice only, and my experience has not been a very limited one.

She left the hospital at the end of six weeks, feeling very well. The wound was soundly healed, and the uterus did not seem to be adherent as I have seen it in some cases.

I made a careful examination of the pelvis before she left. The intercristal diameter was $10\frac{1}{4}$ in., the interspinous $9\frac{7}{8}$ in., the external conjugate $6\frac{3}{4}$ in., and the diagonal $3\frac{3}{16}$ in. The conjugata vera would be about $2\frac{1}{2}$ in.

I saw and examined this patient last week. For the last six months she has been in service as a general servant. She has menstruated about every three weeks. About the middle of April a small swelling formed a little to the left of the scar, and in a few days pus began to discharge from a small opening about the junction of the lower and middle third of the scar. There is still a little pus coming away, but no stitch has yet appeared.[1] A vaginal examination reveals that the uterus is much atrophied and retroverted, just as in an old woman. It is quite free. In the left ligament there is some thickening, apparently at the point where the tube was tied and cut. It is curious that a ligature should lie quite quiescent for fully eight months, and then suddenly set up suppuration.

Her general health is very good. The baby is thriving.

CASE II.—M. L., i-para, æt. 20, admitted 12th January 1898.

[1] A uterine silk suture came out on June 28th.

I had seen this patient nearly four months before, and had arranged for her to come for Cæsarean section. She did not come back until labour had set in. She was very much deformed both in the legs and back, as you can see from her photograph taken after the wound had healed. She was only 3 ft. 11 in. in height. Her pelvic measurements were as follows:—Intercristal, $9\frac{1}{4}$ in.; interspinous, $8\frac{1}{2}$ in.; external conjugate, $5\frac{3}{4}$ in.; diagonal conjugate, $2\frac{3}{4}$ in. The pelvis was very oblique, and the true conjugate was certainly under 2 in.

On admission the os was about the size of a sixpence. Assisted by Dr Edgar I operated in the usual way, controlling the hæmorrhage with the pessary. I delivered feet first. The child, a male, was alive, but had to be resuscitated. It weighed $6\frac{3}{4}$ lbs. It showed marked thickening of its ribs.

The patient stood the operation well. Her temperature remained normal throughout the puerperium, except on the third day, when her breasts became engorged, it rose to 100°, but was normal next morning. She nursed the child for about a month, but her milk supply was too scanty for it, and as it was not thriving it was weaned, and put on a cream mixture. Both were well when dismissed. I saw her recently, and found her looking exceedingly well. She had not menstruated since the operation. The child was well.

Case III.—M. Q., ii-para, æt. 22, admitted 16th January 1898. This patient had been delivered of her first child in the hospital on 9th March 1896. It was a macerated seven-month child, born by the breech. The aftercoming head had to be perforated. Her pelvic measurements were as follows:—Intercristal, $10\frac{3}{4}$ in.; interspinous, $9\frac{3}{4}$ in.; external conjugate, $6\frac{5}{16}$ in.; diagonal conjugate, $2\frac{1}{2}$ in.; true conjugate by post mortem measurements when the pelvic contents were removed, $1\frac{5}{8}$ in.

On admission she was having strong pains, and the os was the size of a florin, the membranes unruptured. The head presented. She had a vaginal discharge which been going on for a fortnight, with frequent and painful micturition. The vaginal walls were inflamed. The urine was drawn off. The passage of the catheter caused great pain. The urine was subsequently found to contain albumen, some pus, and a few tube-casts. The fœtal heart was distinctly heard.

It was quite evident that she had a septic vaginitis, gonorrhœal in all probability, but considering the size of the pelvis I came to the conclusion that craniotomy was not a feasible operation with a fairly large child. I decided to do Cæsarean section, although I felt sure the chances were that she would become septic. To make matters worse the membranes ruptured before we could begin the operation. She was well douched, and the vagina was also well scrubbed out with perchloride of mercury.

I operated in the usual way, assisted by Dr Edgar. The uterus was firmly moulded round the child, and the lower part of it much thinned out. The child gave a gasp or two, but could not be resuscitated. It was a male, and weighed 7 lbs. The uterine wound was stitched with silk in the usual way, and the tubes were tied and cut. She stood the operation well, and was not sick after it. She did very well for the first twenty-four hours. The temperature had risen to 100°·4. As she had not passed flatus, she was given an enema of 10 grains quinine and one ounce of brandy. The flatus bothered her a good deal during the day, and she vomited occasionally. Large doses of bismuth and soda did not relieve her, neither did a turpentine enema, or the rectal tube bring any away. A mustard blister over the stomach relieved the sickness, however. She was given champagne by the mouth, which she retained. Her temperature had fallen to normal again. There was practically no distension of the abdomen, and the lochia were sweet. She was given grain doses of calomel every hour for six hours. During the night of the 19th her temperature suddenly ran up to 104°·4, and she had a violent rigor. She was freely stimulated, and given 15 grains quinine and one ounce of brandy by the rectum, and a hypodermic of strychnine. The temperature quickly fell. A good deal of flatus was got away by means of a turpentine enema.

From that time onwards she lay in a drowsy condition. I dressed the wound and found it looking perfectly healthy. As the calomel had failed to move the bowels we gave her first half an ounce of sulphate of magnesia by the mouth, and some hours later an ounce, and this moved them freely.

20*th*.—She was very restless and ill-looking, but her temperature had not risen above 99°. Her pulse remained about 130. There was no distension of the abdomen, and no tenderness, except slight, just over the uterus. She was being freely stimulated. The bowels acted again. She was very restless during the night, and began to vomit dark grumous material. She died about 8.30 A.M. on the 21st, four days and four hours after the operation. Just before death she became quite conscious.

The following is a summary of Dr R. M. Buchanan's post mortem report:—

'On laying open the abdominal cavity a small quantity of dirty greyish fluid appears in the most dependent part in front of the uterus, and a yellowish exudation over the fundus uteri, and in the sulci between the adjacent coils of the bowels, gluing them together. The superficial coils of bowel are considerably infected, and fibrin is apparent in gradually decreasing amount upwards. On viewing the abdominal wound internally, it appears in active process of healing. In the lower end of the wound there is a small abscess with greyish purulent contents.

'The spleen is enlarged and soft. The kidneys are pale, and

present deep tubular markings of the surface. On section the deeply injected pyramids contrast with the pale cortex. The left is considerably larger than the right. The liver is of normal size, and its tissues very pale and yellowish. The stomach is normal.

'The pelvic organs are removed *en masse*. The anterior surface of the uterus shows a sutured incision measuring $3\frac{3}{4}$ in. At the lower end a couple of stitches appear towards the right. The interior of the uterus presents a greyish-yellow purulent coating which has peeled off from the posterior wall, along which the organ is opened up. The placental site is in the anterior and superior zone. The lower end of the wound gapes slightly. By brushing aside the greyish-brown exudation occupying this part of the wound several stitches are exposed. The examination of the upper two-thirds of the wound in the same way fails to reveal the stitches. The lower third of the wound contrasts with the upper two-thirds in presenting a yellowish purulent surface. On viewing the wound from the peritoneal surface it is found to present corresponding evidence of acute purulent inflammation in the lower end, with a greenish yellow exudation. On inspecting the vulva an old deep cicatricial depression is found below the urethral orifice on the left side.

'The pelvis presents an extreme degree of rachitic deformity. The antero-posterior diameter measures $1\frac{5}{8}$ in.; the transverse, $5\frac{5}{8}$ in.; the oblique approximately $4\frac{1}{2}$ in. on both sides. The greatest right lateral antero-posterior diameter measures taken at the sacro-iliac synchondrosis, $1\frac{3}{16}$ in., and the left, $2\frac{3}{16}$ in. The transverse at the outlet measures $4\frac{1}{8}$ in.'

Dr Buchanan examined the exudation from the peritoneal cavity, and also the vaginal discharge. He found the bacillus coli communis and also a coccus in both, but he was not sure that the latter was the gonococcus. The infection had evidently travelled up from the vagina to the uterus, and finally into the peritoneal cavity by the lower stitches. The uterine wall was very thin at the lower part of the incision, so that the stitches were necessarily near the internal surface. The incision should have been made nearer the fundus. In the next case I kept well up to the fundus. As it turned out, if I had made it higher I would have cut into the placenta, as its edge just reached the upper part of the incision.

I am inclined to think this patient would have had a better chance of recovery if I had done a Porro.

CASE IV.—Mrs G., iv-para, æt. 27, admitted 13th March. Former obstetric history:—She was delivered of her first child in February 1890 by Dr W. L. Reid, who did craniotomy at full time. She had an attack of pelvic cellulitis during the puerperium Her second confinement was also at full time in December

1892 when Dr Oliphant did craniotomy. In July 1894 she again turned up, nearly seven months pregnant, and was asked to come back in a fortnight for induction of labour. She did not come back for fully a month, and then labour had come on about the end of the eighth month. Version was done and craniotomy of the aftercoming head. Each of the operators had made out the conjugata vera to be 2½ in.

On admission the patient was given a hot bath, but, contrary to our definite instructions, the temperature of the reception-room was considerably below 60°. When I saw her in the labour-room she was shivering and complaining of feeling cold. She had a cough, and said she had been suffering from it for several weeks. The bowels were very constipated, and could only be imperfectly cleared out by enemata. She was having strong pains. The head presented with the occiput to the right, the os was nearly fully dilated, and the membranes intact. My colleague, Dr Black, was on duty, but he had a poisoned finger, so he asked me to take the case in hand. I decided to do Cæsarean section, as the child was alive.

A few minutes before we were ready for the operation the membranes ruptured. There was no urine in the bladder, so we did not get a specimen. Assisted by Dr Edgar I operated in the usual way, taking care to make the incision high up, almost to the fundus. At the upper part the uterine wall was fully one inch in thickness. The pessary controlled the hæmorrhage completely. I delivered by the feet. The child, a male, had to be resuscitated. Deep silk and superficial catgut sutures were used and the tubes tied and cut. The right tube and ovary were bound together and to the side of the pelvis by old adhesions. As there was some bleeding from the right tube when cut, I made a stump of the cut ends and tied them *en masse.*

The patient stood the operation well. She was restless during the night, and vomited frequently. The flatulence was troublesome. She slept at intervals. Three and a half ounces of urine were obtained. It was very dark in colour. There was evidently carboluria. This seemed very strange, as there had not been any sponging of the peritoneum required. The absorption must have taken place from the gauze sponges which were packed round the uterus.

14*th.*—The cough was very troublesome. Coarse moist *râles* were heard all over the chest. Poultices of linseed and mustard gave her considerable relief. She passed 9 oz. of urine during the day. It was clear, but contained albumen and tube-casts. The temperature varied from 99° to 100°·6. The pulse ranged from 85 to 90 during the day, but rose to 120 in the evening. Stimulation by brandy was commenced.

15*th.*—She was in much the same condition all day, but towards evening the pulse became weaker, and $\frac{1}{100}$ grain of strychnine was

given hypodermically. Eleven and a half ozs. of urine had been passed in twelve hours.

16*th.*—She was very restless and the skin had become very dry. Her bowels were freely moved by repeated small doses of sulphate of magnesium. Imperial drink was given frequently, and champagne substituted for the brandy. She began to complain of headache and to grow stupid. Only 2 oz. of urine were collected during the last twelve hours, but some may have passed with the motions. From that time onwards we were never able to collect any more, except 1 drachm which I got by catheter. The albumen had lessened considerably.

Prof. Stockman kindly saw her with me in the evening. We decided to dry-cup her over the loins. She had already been poulticed, and this was continued. We put her in a steam bath until she was perspiring very freely. Fifteen grains of diuretin were given every four hours. There was a distinct urinous odour from her breath.

17*th.*—About 5 A.M. she passed some urine into the bed. She was very drowsy during the night, and had now become semi-comatose. Her pulse was weaker, from 120 to 140. There had been profuse salivation ever since the diuretin was commenced. She was taking milk and soda and her stimulant well. In the afternoon I decided to bleed her and transfuse a normal saline solution directly into the vein. I took about 10 oz. of blood and transfused a pint of the saline. I had tried this in a case of eclampsia, with the result that 10 oz. of urine were secreted in a few hours. About two hours after the transfusion she had considerable twitching and what might be called a slight fit. She passed some urine into the bed.

18*th.*—She was in the same semi-comatose condition; pulse 130 to 140, and feeble. The skin was still moist, and she was continually expectorating. We gave her croton oil, which freely purged her. I transfused a pint of saline solution into the areolar tissue of the left axillary region. The pulse improved considerably. She twice passed a little urine into the bed, but we failed to get any by catheter.

19*th.*—She had gradually grown worse. She died comatose. Towards the end there was right lateral deviation of both eyeballs, and immediately before death she had a violent general convulsion of about a minute's duration.

Summary of the post-mortem report by Dr R. M. Buchanan:—

'The abdominal wound is free of inflammation, and is in the process of perfect healing. There is no evidence of inflammatory action in the abdominal cavity, but there are a large number of old firm adhesions in the right side, especially in the right iliac fossa.

'*Kidneys.*—The right is of normal size; its capsule is slightly

adherent, and its cut surface extremely hyperæmic. The hyperæmia is most marked in the pyramidal areas, which contrast with the pale yellowish red-streaked cortex. There is no hydronephrosis.

'*Left.*—The upper end is flattened against the spleen. Its general appearance is similar to that of the right.

'*Spleen.*—Normal in size and appearance.

'*Liver.*—Normal in size; is very hyperæmic, presenting the nutmeg character most typically—the congested centre contrasting with a more than usually pale periphery in each lobule.

'The pancreas and supra-renals appear normal.

'The pelvic contents are removed *en masse*, but before this is done it is noted that the fundus uteri lies 2¾ in. above the symphysis pubis, and its surface is intensely congested. A fringe of omentum is firmly adherent to the right Fallopian tube and ovary, and throughout these parts are firmly bound to the abdominal wall at the pelvic brim. These are the old adhesions before mentioned, and seen at the operation.

'*Uterus.*—The anterior surface presents a sutured wound, beginning about one inch from the fundus, and extending in a slightly oblique direction downwards towards the right to the utero-vesical fold. The stitches are embedded in a yellowish exudation, and union appears complete throughout.

'The bladder is empty, and in its posterior wall are two small hæmorrhages in its mucous membrane.

'The uterus is opened in the middle line posteriorly, the incision passing through the placental site in the central zone. The internal surface, though intensely congested, is quite smooth and free from any inflammatory exudation. The wound itself is in process of healing throughout, and the line which marks it presents no inflammatory products.

'The Fallopian tubes have been ligatured and divided, and a second ligature binds together the cut ends of the right. A corpus luteum is found in the left ovary; the right is involved in old adhesions in its proximal half. The caput cæcum lies above the iliac crest, and is firmly bound down to the abdominal wall. The stomach contains about 6 oz. of bile-stained fluid. Its mucous membrane is normal.'

Microscopical examination of kidneys and liver from case of Mrs G., Maternity Hospital. Post-mortem on 20th March 1898.

'A section of the kidney does not at first sight reveal any striking departure from the normal. On closer examination, however, the tubules of the cortex are seen to be almost uniformly dilated. The lumen of each tubule is occupied by a finely granular material, and the epithelium appears compressed. A considerable number of the straight tubules are also dilated and filled by the same material in a more coarsely granular form. There is no shedding of the

epithelium, and no tube-casts are visible. The Malpighian bodies and the bloodvessels are normal.

'In the liver fatty degeneration is very manifest. There is also hyperæmia involving atrophy of many hepatic cells in the central part of each lobule.'

Dr Buchanan is of opinion that the substance blocking the tubules is precipitated albumen, and that there is nothing in the kidney condition to account for the suppression. If we accept that opinion where are we to look for the cause? I have seen total suppression from shock after an amputation at the hip joint; but here we had no shock, and, besides, it was two days after the operation before it became manifest. Reflex inhibition may also be suggested, but I must say this explanation conveys very little information to my mind. Again, I would ask why did it come on so late? and not immediately after the operation.

Those of the Fellows who have had a large experience in abdominal surgery will be able to tell us if they have ever met with a case of suppression of urine following an abdominal operation. In the fifty-four Cæsarean sections which have been done in the Glasgow Maternity Hospital, this is the only one it has occurred in, and I do not know of any case recorded.

Transfusion of a saline solution directly into the circulation, and also into the areolar tissue, was done with the idea of diluting the poison and flushing the kidneys. In eclampsia cases I have found these cause a marked increase in the urine. I did not use pilocarpin because of the bronchial condition, and, besides, the skin acted well after the steam-bath.

The blood was submitted to Dr Harris, assistant to the Professor of Physiology, for examination, and the following is his report:—

'On 17th March 1898 I received from Dr. J. L. Carstairs, Maternity Hospital, Glasgow, about 500 c. c. of clotted blood taken by venesection from the right arm of a woman who had been delivered by Cæsarean section on the 13th.

'I was told that the patient was then suffering from total suppression of urine, but as I was not informed what was the precise feature of the blood I was to examine into, and being myself more particularly interested in the inter-relations of the pigments, I had time to make only some hurried investigation into the pigment present in the serum.

'As the clot contracted, a quantity of transparent serum exuded from it; this, alkaline in reaction, was notably yellower than is normal, and, as it contained a few red blood-corpuscles, I centrifugalised it, obtaining a perfectly limpid golden-yellow liquid. Examined with the spectroscope, this gave a very well marked absorption-band at the F line, *i.e.*, at the green-blue junction. In

addition to this band, I was greatly surprised to find the two bands of oxyhæmoglobin, showing that this serum, quite free though it was from red blood-cells, had nevertheless dissolved out a little HbO_2; the two bands at once gave way on treatment with NH_4HS to the single one of the reduced hæmoglobin.

'The band at F seemed to agree in position exactly with the published charts of "spectrum of serum-lutein in serum" (as, *e.g.*, No. 24, plate iii., Schäfer's *Text-book of Physiology*, 1898), but to be distinctly darker than the band due to the pigment of normal serum, regarded by some as "lutein," a lipochrome, but by M'Munn, whom I follow, as urobilin itself. Of course a band at or near the green-blue junction always suggests bile-pigment as much as it does urinary pigment, but there is, in this case, a presumption that the latter was present, and in excessive amount, because:—

'1. The blood on being warmed smelt unmistakably of urine; this, to me a new experience, was very striking, as the odour was indistinguishable from that of somewhat stale urine.

'2. The chemical evidence for the presence of bile-pigments and bile-salts in the serum was by no means clear. Gmelin's reaction *did* give a blue-green colour, but not the subsequent "play of colours" characteristic of bile-pigment; again, Pettenkofer's test yielded an orange-tinted froth rather than a true pink.

'3. There was no jaundice clinically Now I am aware that the urine shows traces of bile-pigment even before "jaundice" can be pronounced to be present, and also that the spectroscope can detect bile-pigment when Gmelin's test cannot; at the same time, while not precluding a trace of bilirubin in this serum, I do not think that bilirubin accounted for the greater part of the pigmentation.

'4. On analysis of the serum by Gerrard's ureameter, the urea was found to be ·2 per cent.; this is greatly in excess of its amount in normal serum. This is further presumption that products of renal excretion were present here to an abnormal degree.

'5. The left-sided extension of the band at F more nearly corresponded with the limits of the band of urobilin, as given in the majority of charts, than with those of the band of bilirubin.

'I am unfortunately not able to be more precise in my report; but taking a broad view of this fatal case, as it proved, of anuria, I believe we had here in the serum excess of the metabolites which the kidneys should have separated, notably the urea and the pigment, which latter is in all probability normally present in the plasma (and therefore in the serum) of circulating blood, being mainly derived from the katabolism of HbO_2 in the liver whence the iron-free pigment passes on into the blood—quitting the liver as a kind of "internal secretion." This material being, however, an internal secretion that is *not* beneficial to the body, is normally eliminated by the renal epithelium.'

This report is an exceedingly interesting one. Experts in physiology may be able to draw some practical conclusions from it. I think this line of investigating the blood is well worth pursuing in the study of eclampsia.

Time will not permit me to take up all the points in reference to the operation of Cæsarean section, but there are two or three I would like to refer to shortly.

1. How are we to control the uterine hæmorrhage during incision? An elastic ligature, in my opinion, does more harm than good. Cameron's method of pressing a slightly curved pessary firmly on the uterus and cutting inside of it does admirably.

2. How should the uterine incision be made? A transverse fundal incision has been recommended, and also a longitudinal one right over the fundus; but I think a longitudinal one beginning at the fundus and extending downwards for about 4 in. is better than either of these.

3. Which is the best material to suture with? In all of these cases I used silk. The ease with which it can be rendered aseptic by boiling is greatly in its favour. In a good many cases some of the sutures have suppurated out months after the operation. I have here two which came away from a case eleven months after the operation through a sinus which had been discharging for nine months. This patient also passed several per urethram. In several cases phosphatic calculi have formed round sutures which had passed into the bladder. In one of Cameron's cases the calculi were actually seen hanging from the roof of the bladder on stitches. In my first case a stitch is at present making its way out. Catgut will last quite long enough, and I intend giving it a trial if I can get it thoroughly aseptic.

4. Are we justified in sterilizing these patients? I think we are, but a teacher of medical jurisprudence has asserted to me that we have no right to do so. The only effectual method of doing this, unless we remove the ovaries, is to tie the tubes in two places and cut them. Tying them in one place only cannot be depended upon, as has been shown in more than one case already.

In conclusion, I desire to thank all those who kindly assisted me with these cases, and especially Drs Buchanan and Harris for their interesting reports. I trust I have not wearied you with too many details in the reports of the fatal cases. Full reports of successful ones are common enough, but they are not the ones from which we learn the most.

Professor Simpson agreed with the President in thinking that Dr Jardine had conferred a benefit on the Society in recording so carefully his interesting cases. The fatal ones were especially instructive. He (Prof. Simpson) thought the greater frequency of

Cæsarean operations in Glasgow was due to the greater frequency of the graver degrees of pelvic deformity; for happily dwellers in Edinburgh were not so subject especially to rickets. The restriction of embryulcia was due not only to improvements on the side of the Cæsarean procedures, which limited the application of embryulcia in the greater degrees of contraction, but also to improvements in the use of forceps, turning, and the indication of premature labour which competed with it in the slighter degrees of contraction. Still, as Dr Jardine had stated, there was a field for the embryulcia procedures, and it was important to have students taught how to carry them out. He (Prof. Simpson) was not sure that he would not have been disposed in Dr Jardine's fourth case to have repeated the embryulcia; but, of course, it was only the obstetrician who had the actual condition of the patient before him who could fairly judge which was best.

Dr Kynoch said with reference to the vulvar hæmorrhagic discharge noticed by Dr Jardine in one of the four children, it was a curious coincidence that in four Cæsarean sections which he had observed, three of them during his term of residency in the Glasgow Maternity Hospital, two of the children had this hæmorrhagic discharge, lasting a few days. He believed the temporary application of the elastic ligature tended to produce subsequent uterine relaxation, and that hæmorrhage was best prevented by thorough sponge pressure on the uterine wall after the removal of the child.

Dr Jardine, in reply, thanked the Fellows for the kindly way in which they had received his contribution. He said that of the 54 Cæsarean sections performed in the Glasgow Maternity Hospital 53 of them had been done in cases of contracted pelves, with conjugates of 2½ in. and under. One had been done by his assistant in a case where anterior vaginal fixation of the uterus, done for retroversion, had prevented the os dilating. Turning and craniotomy had both failed, and the section was done as a last resort. The patient had died on the second day. Last year they had dealt with 40 cases of contracted pelves, all requiring operations. In his fourth case he might have performed craniotomy easily enough, but considering that the woman had already had four craniotomies done, and one of them on an eighth month fœtus, he did not think it would have been right to have continued this destructive work. He thought the result, as regards the mother, would have been the same if craniotomy had been done.

XI. *Dr Jardine* read a SHORT NOTE OF A CURIOUS CENTRAL TEAR OF THE PERINEUM.—Fourteen years ago this patient was attended in her first confinement by two students from the Maternity Hospital. The patient says that the tear occurred then, but the students, if they observed it, failed to report it, as the labour is entered as a normal one. The present confinement was her eighth.

Right Labium.
True Vulvar Orifice.
J. Lindsay. del.

When the head was at the vulva a band of tissue was seen to be stretched over it, and the nurse slipped this towards the left side, when the head was at once expelled. The eight children have all been born through the abnormal opening, as the normal vulvar cleft has evidently never been distended.

At her first labour the head evidently came through the centre of the perineum, and the tear, instead of passing into the vulva, had extended forward, completely separating the right labium minus along its junction with labium majus. The tear extends as far forwards as the clitoris. The condition does not cause the patient any inconvenience. Until the parts are separated you would hardly notice anything was wrong.

I am indebted to my friend Dr John Lindsay for the excellent drawing. As a curiosity, I think the case is worth publishing as a sort of companion picture to Sir J. Y. Simpson's one of 'central rupture of the perineum.' Besides doing the drawing, Dr Lindsay has furnished me with the following extract from an article on Generation, in Harvey's works, which is very interesting, although we cannot subscribe to his conclusion as to the cause:—

'A white mare of great beauty had been presented to her Serene Highness the Queen, and in order that its symmetry and usefulness might not be impaired by foal-bearing, the grooms, as is the custom, had infibulated the animal with iron rings. This mare (by what chance I know not, nor could the grooms inform me) was got with foal; and at length, when no one suspected anything of the kind, she foaled in the night, and a living foal was found the next morning by the mother's side. When I heard of the circumstance, I went immediately to the place, and found the sides of the vulva still fastened together by the rings, but the whole pudendum on the left side so thrust and torn away from the pelvis by the almost incredible efforts of the fœtus, that a gap sufficiently wide was made to admit of its escape, such is the force and vigour of a full grown and healthy fœtus.'

XII.—TOTAL HYSTERECTOMY DURING PREGNANCY FOR RAPIDLY GROWING FIBROMYOMATA.

By N. T. Brewis, M.B., F.R.C.P.E., Lecturer on Gynæcology, Royal Colleges School of Medicine, Edinburgh.

Mrs B., aged 29, came under my care on the 24th March 1898, on the recommendation of Dr Mackay, complaining of an abdominal swelling and of constant pain in the right side. The patient stated that she had been married sixteen months, and had altered regularly till the last week of November, when the flow appeared for the last time. On New Year's day she felt perfectly well, but thought that for a month previous she had been getting stouter, and as she had now missed a period, and had morning

sickness, she considered herself pregnant. In the middle of January she was seized with a sharp pain in the right side of her abdomen, and at this time she first recognised the swelling. The patient stated that day by day she was able to note increase in the size of the swelling, and when I first saw her it had extended to the upper limits of the abdomen. The pain continued severe, and was more or less constantly present. Her face, limbs, and chest had become thinner.

Physical Examination.—The abdomen is occupied by a swelling the upper part of which extends below the margin of the ribs. On the right side it passes deeply down into the flank. About 2 inches below the umbilicus there is a depression running transversely from side to side, dividing the swelling into an upper and lower portion. The former can be moved about and made to slide on the latter, to which it is apparently attached by a pedicle. Both portions are of solid consistence, but the upper is the harder, and its surface is more irregular. The fœtal heart sounds were not heard. Abdomino-vaginal examination showed that the lower portion was the body of the uterus enlarged and rendered irregular in shape by two outgrowths in the left broad ligament closely attached to the uterus. The larger was about the size of a cricket ball.

It was evident that the patient was four months pregnant, and that she was the subject of at least three subperitoneal fibroids, two growing low down from the left side of the uterus, and one larger, the larger one attached to the fundus by a pedicle. From the rapid increase in size of the latter growth, the pain it gave rise to, and the emaciation which accompanied it, one feared malignant degeneration. Under these circumstances it was clear that the proper treatment was removal of the large tumour, and of the uterus also if it was found that the outgrowths at its lower part were likely to cause trouble in the future. Accordingly the patient was prepared for the operation in the usual way, and special care was taken in cleansing the vagina, in view of the possibility of vaginal section being required.

Operation, 4th April 1898.—The umbilicus was cut out, the peritoneum divided, and the incision extended downwards to the pubes and upwards to within three inches of the ensiform cartilage. The interior was now exposed and the parts were found as described under physical examination. The upper and larger portion consisted of a hard tumour united to the right corner of the uterus by a pedicle about 2 inches in length and 1 inch in thickness, twisted half a circle from left to right. The lower portion was composed of the uterus enlarged to the size of a four months' pregnancy. Projecting under the peritoneum were a number of small fibroids. The round ligaments, Fallopian tubes, and ovaries were greatly hypertrophied. On the left side of the corpus uteri was a rounded sessile tumour with uneven surface, as

large as an orange, which if left would certainly be a serious barrier to delivery, more especially if it grew rapidly. On this account we determined to perform total hysterectomy. The pedicle uniting the large tumour to the uterus was ligatured with silk and divided. The patient was then put in the Trendelenberg position, and both broad ligaments were tied and divided down to a point below the round ligaments. The peritoneum on the anterior aspect of the uterus was divided from side to side about an inch above the reflection of the bladder. A similar incision was made posteriorly. The anterior flap with the bladder was pushed well down in front, and the posterior flap was reflected as low down as the vaginal roof. A wire was now passed round the cervix and tightened, and the body of the uterus, along with the ovaries and tubes, removed by a circular incision at the isthmus uteri. During this procedure the liquor amnii gushed out, and was followed by the fœtus. The removal of the uterine body at this stage was not necessary, but was done with the object of making the vaginal roof and the bases of the broad ligaments more accessible. The vagina was now opened in front on the tip of a pair of clamp forceps passed from below, and the opening widened by the fingers. A finger was then passed into the posterior fornix and made to project behind the cervix within the posterior flap of peritoneum. An opening was here made into the vagina and widened with the fingers. Clamps were applied on the base of each broad ligament, and the cervix cut out between them. Gauze was now placed in the vagina and between the clamps, and the anterior and posterior flaps of peritoneum stitched together over the gauze and clamps. In this way the peritoneal cavity was shut off from the base of the broad ligaments and the vagina. The abdominal wound was closed without drainage. The clamps were removed on the second day, and the gauze on the day following. The patient made an easy and uninterrupted recovery. There was less discomfort than is usually felt after abdominal operations, and the temperature never rose above normal. She now feels perfectly well.

Remarks.—The most noteworthy feature in this case was the rapid growth of the tumour. In the beginning of January the patient was not aware of the existence of any swelling; by the middle of March the tumour had reached the upper limits of the abdomen. We know that pregnancy hastens the progress of fibroids, but the rate of growth in Mrs B.'s case surprised me, and made me fear some form of degeneration. As it turned out, the tumour on section presented a number of cavities showing mucoid degeneration. The pain was probably caused by the rapid expansion of the tumour. Slight modifications in the operation of 'pan-hysterectomy' may be referred to, as carried out in this case, viz.:—(1) Using clamps on the uterine arteries instead of

ligatures; (2) making the opening in the posterior fornix not into Douglas' pouch, but within the posterior flap; (3) stitching the anterior and posterior flaps of peritoneum over the clamps and gauze, thereby shutting off the peritoneal cavity from the vagina. The clamps and gauze provided effective drainage downwards.

SEVENTH (ADJOURNED) MEETING.—JUNE 22, 1898.

DR R. MILNE MURRAY, *Vice-President, in the Chair.*

I. The following gentlemen were duly elected Honorary Fellows of the Society:—Charles J. Cullingworth, M.D., D.C.L., London; Lombe Atthill, M.D., Dublin; Professor S. Pozzi, M.D., Paris; G. Leopold, M.D., Dresden; Professor Howard A. Kelly, M.D., Baltimore; Professor Henry C. Coe, M.D., New York; E. Doyen, M.D., Paris.

II. The following gentlemen were duly elected Ordinary Fellows of the Society:—John Christie Forbes, L.R.C.P. & S.E., L.F.P. & S.G., Northfield, Liberton; A. C. Ainslie, M.B., C.M., 20 Newington Road, Edinburgh; and Dr Dumat, Durban, South Africa.

III. *Professor Simpson* showed—(*a*) Specimens of OVARIAN TUMOURS, in the removal of which Doyen's forceps had been used; in all the result had been satisfactory; and (*b*) DOYEN'S FORCEPS for compressing the pedicle referred to.

IV. *Dr Brewis* showed—(1.) AN OVARIAN TUMOUR WITH STRANGULATED PEDICLE, and gave the following notes of the case:—The patient, a healthy young woman, had during the last four months had several acute attacks of pain in the right side. The first of these occurred in February, lasted a week, and at that time was thought by her medical attendant to be an attack of typhlitis. In the end of May she had a similar seizure. Her last period, which terminated on June 11, was accompanied by considerable pain. On the 13th she was seized with acute pain in the right side and with vomiting. The latter continued all next day, and the pain remained severe till relieved by operation. Dr Brewis saw her with Dr Veitch on the 16th, and found a tender fixed cystic swelling occupying the hypogastrium. By vaginal examination the tumour was felt lying above the retroverted uterus. The bowels had refused to act for five days, and the temperature ranged from 99° to 103°. A provisional diagnosis of ovarian tumour with strangulated pedicle was made. The abdomen was opened on the 18th. A marked increase in the size of the swelling was observed to have taken place during the

previous two days. The surface of the tumour when reached presented a black, mottled appearance, and a considerable quantity of blood was present in the peritoneal cavity. The posterior aspect of the tumour was adherent to bowels by soft adhesions. The pedicle was thin and tightly twisted three or four times from right to left. When the tumour was removed, the bowels lying below the site of the tumour were found closely adherent to each other, and were evidently blocked. The coils were gently separated, the peritoneum cleansed, and the abdomen closed without drainage. The patient's bowels moved freely on the afternoon of the operation, and several times next day. Recovery was uneventful. The temperature kept subnormal after the operation. The tumour was considerably larger than a fœtal head, was nearly round in shape, and black in colour. The swelling was situated between the layers of the outer end of the broad ligament. On the anterior surface a rounded, somewhat transparent cyst, of the circumference of a five-shilling piece, bulged through the peritoneal covering. The tube encircled about two-thirds of the circumference of the swelling, coursed over its upper aspect, and was greatly hypertrophied. It measured eight inches. The fimbriæ were enlarged and very vascular, and were placed on the free surface of the swelling. The ovarian fimbria was markedly thickened. The swelling appeared to have originated from the hilum of the ovary, and to have developed between the layers of the broad ligament. The ovary proper was enlarged, soft, and pulpy. Farre's line was well seen. The swelling when opened was found filled with blood, and the interior was dotted over with papillomata.

2. A LARGE OVARIAN TUMOUR WEIGHING 44 LBS., from a young woman who had had amenorrhœa for eleven months.

V. *Dr Foulis* gave a demonstration of the GENITO-URINARY ORGANS OF FŒTAL DEER.—He said that last autumn he had made a collection of fœtal deer, and that for some months past he had been working at the development of genito-urinary organs, and he now showed the Society four dissections in which, under a low magnifying power, it was possible to see the Wolffian bodies, and the Müllerian and Wolffian ducts passing downwards towards the tail end of the young animals to form that structure known as the genital cord, which became attached to the sinus urogenitalis, a part of the allantoic stalk. It was also possible to see in these preparations the urachus, the bladder, and the two large hypogastric arteries on either side of the allantoic stalk. In one preparation the genital cord was dissected out; and it could be seen that the Müllerian and Wolffian ducts made up the cord; and in this same preparation a part of the sinus urogenitalis had been cut away, just at the spot where the genital cord joins it, and on the urethral floor thus exposed could be seen an eminence which

was evidently the verum montanum, said by some observers to be the analogue of the hymen in the female. In another preparation the sexual eminence was well seen, and on its under surface was a distinct fissure which might close in during the formation of the urethra, or might be the vaginal orifice with the nymphæ on either side within the labia majora.

VI. *Dr D. Berry Hart* read a communication on THE ANALOGUES OF THE MALE AND FEMALE GENITAL TRACT.

Dr Foulis said he was sure he was expressing the opinion of every Fellow present when he said that the paper just read was a most elaborate one on a most important and difficult subject. With regard to that part of the subject which Dr Hart seemed to be most interested in, viz., whether the Wolffian ducts took part along with the Müllerian ducts in the formation of the vagina, Dr Foulis thought he was correct in stating that the subject had been well worked at by many observers, some of whom had stated that the Wolffian ducts did actually enter into the formation of the vagina. The question as to the analogue of the hymen was an extremely interesting one; and if it should turn out to be correct that the epithelial bulbs at the ends of the Wolffian ducts were the analogue of the hymen, as stated by Dr Hart to-night, he deserved all credit for his investigations and conclusions; but Dr Foulis thought that point was by no means settled as yet. As regards the ovary and testicle, Dr Foulis had satisfied himself that the ovary is at no time of its existence a tubular structure, and that the cells which nourish the young ova are, with the blood-vessels of the ovary, all of mesoblastic origin.

VII. ON THE POSITION OF THE PROMONTORY OF THE SACRUM AS SHOWN BY FROZEN SECTIONS.

By A. H. F. Barbour, M.D., F.R.C.P. Ed., Assistant Gynecologist, Royal Infirmary; Lecturer on Midwifery and Gynecology, Royal Colleges School of Medicine, Edinburgh.

In teaching students methods of gynecological examination, I always begin with palpation of the lower region of the abdomen and the position of the promontory of the sacrum. This determines the brim of the pelvis in relation to which the pelvic organs can be localised. With the patient under chloroform, the promontory can be easily made out, and its height above the symphysis measured. In doing this I have been struck with the variability in its position, apart from posture. The change in the inclination of the brim, due to changes in posture, is of course a commonplace, but I was not prepared to find such variations in the level of the promontory with the patients placed, as far as possible, in the same posture. With the patient on the back and

the limbs extended, the position of the promontory varies from 2½ to 4 inches above the symphysis. At first I was inclined to attribute this variability to difference in the length of the conjugate, but a study of frozen sections has shown me there is another factor which has not received attention, and which I wish to bring forward in this paper.

Hitherto the pelvis has been studied only in the dry preparation out of the body, or clinically in the living subject. The first method has its advantages and drawbacks; while it allows us to measure the diameters with precision, it gives no data for determining the position of the pelvis during life, and it disregards altogether the effect of the soft parts. Hence the information gained must be corrected and supplemented by such investigations as have been made in the living subject by Schultze and Skutsch. In dealing with a living subject a new set of difficulties arise from the way in which the pelvis is buried in the soft parts and the difficulties of getting at it so as to make exact measurements. There is a further difficulty when we endeavour to measure one pelvis after another, for it is not easy to place and to keep one patient after another in the same position while the different measurements are being made.

Frozen sections offer a third means of investigating the form and position of the pelvis, and their study brings forward a new series of facts to correct and supplement the information gained from the two methods already mentioned. This third method, like the other two, has also its advantages and drawbacks. The advantages are that it shows us the pelvis set in the body. It is now no longer a question of holding a pelvis with dried ligaments in any position, or at any angle you please, but you see it kept in the position it occupied during life. Further, and what is of the first importance for clinical work, you see the pelvic cavity in relation to the abdominal cavity. Hence the pelvis can be studied in a way which is of the greatest value both to the gynecologist and to the obstetrician. The gynecologist locates structures in their relation to the brim of the pelvis, and the position of the promontory is of interest to him when determining the position of structures, *e.g.*, uterus and ovaries, with reference to the brim. It is however, specially to the obstetrician that this method of looking at the pelvis is of importance. The contents of the uterus are abdominal in position at the end of pregnancy, while they have to pass through the pelvis in labour; hence the relation of the long axis of the abdomen to that of the pelvis is of the first importance. A drawback to this method of study is that there will be variations in the set of the pelvis according to the position in which the cadaver is frozen. Fortunately frozen sections are usually made with the cadaver on the back, that is to say, with the body in the same position as it occupies both in gynecological examination and during labour. But even with the cadaver in this position

there is room for minor changes in the position of the pelvis relative to the abdomen. I do not therefore attach importance to minor differences in the measurements of the angles given in the following table; after due allowance has been made for these, there remain certain broader features, which, I think, justify the conclusions of this paper. Of some thirty-eight frozen sections that have been made in pregnancy, labour and the puerperium, only fourteen are available for this enquiry. The others are set on one side, either because the section was not mesial, or enough of the cadaver was not frozen or reproduced to serve our purpose.

For comparing one cadaver with another we must have some system for studying the relation of parts to the horizontal plane. If a line be drawn passing through the upper anterior angle of the first lumbar vertebra and the promontory of the sacrum, it will be found, in the great majority of cases, to be parallel to the horizontal plane. In a few sections where the peculiarity in the lumbar curve has thrown this line evidently out of line with the horizontal plane, I have drawn a line through the promontory, parallel to the latter. But in ten out of the fourteen sections, the line drawn through the anatomical points mentioned represents closely enough for practical purposes the direction of the horizontal plane, with the cadaver recumbent. This line also corresponds in direction to the axis of the abdomen as far as this affects the uterus. The fundus uteri at full-time is usually on a level with a point between the first and second lumbar vertebra—never rising higher than the first, even when it elongates during the second stage of labour. The axis of the uterus, therefore, as it lies in the abdomen along the spine, corresponds in direction to this line.

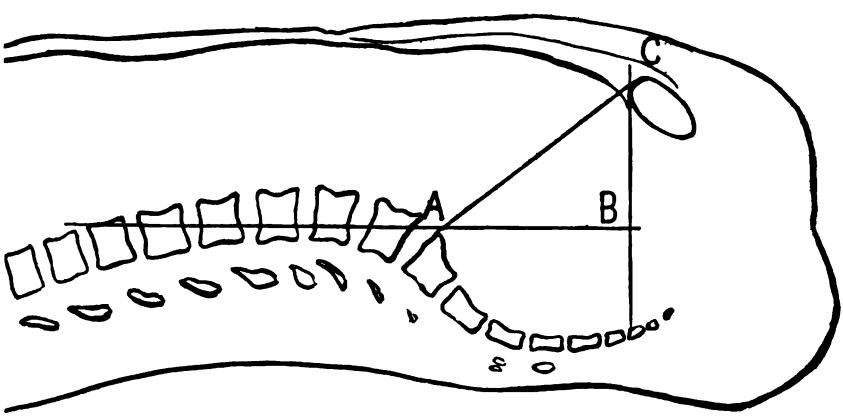


FIG. 1.—Showing the mean height at which the promontory is found in frozen sections, the cadaver being in the dorsal posture. For letters see text.

If on this line, A B, we let fall a perpendicular C B from the

centre of the upper margin of the symphysis, it will mark off on A B the height at which the promontory stands above the symphysis. By prolonging C B until it strikes the back wall of the pelvis we learn how much of the sacrum and coccyx is above the same level—that is to say, how much of the back wall of the pelvis and of the pelvic contents lies opposite to the lower regions of the abdomen. Further, the length of C B shows how far the promontory stands back from the symphysis, or what proportion of the pelvic cavity is in line with that of the abdomen. This latter measurement is of great interest to the obstetrician, as the length of C B will show how much the abdominal contents will tend to rest on the pubis rather than sink down into the pelvis in pregnancy and labour. It is evident that A C, the hypothenuse of this right-angled triangle, corresponds to the anatomical conjugate of the brim.

	A B, or Height of Promontory above Symphysis.	C B, or Distance of Promontory backwards from Symphysis.	Intersection of C B with back wall of pelvis.	A C, or Anatomical Conjugate.	Angle A C B, or set of brim.	Angle A, or inclination of axis of abdomen to brim.
1	5 in.	2·4 in.	Tip of C.	5·56 in.	65°	25°
2	4·68 in.	3·6 in.	Below S.	5·80 in.	55°	35°
3	4·12 in.	2·56 in.	Below S.	4·8 in.	61°	29°
4	4·12 in.	3·08 in.	1st C.	5·08 in.	55°	35°
5	4·0 in.	2·8 in.	Below S.	4·88 in.	57°	33°
6	3·96 in.	3·04 in.	1 and 2 C.	4·92 in.	55°	35°
7	3·96 in.	2·48 in.	2nd C.	4·72 in.	60°	30°
8	3·88 in.	2·4 in.	3rd C.	4·56 in.	60°	30°
9	3·88 in.	2·68 in.	1 and 2 C.	4·68 in.	58°	32°
10	3·32 in.	2·48 in.	4 and 5 S.	4·04 in.	55°	35°
11	3·16 in.	2·8 in	1 and 2 C.	4·16 in.	51°	39°
12	2·92 in.	2·96 in.	Below S.	4·0 in.	47°	43°
13	2·88 in.	3·52 in.	1st C.	4·08 in.	41°	49°
14	2·60 in.	4 in.	4th S.	4·8 in.	35°	55°

In the above table I have arranged the sections in series, according to the length of A B, that is, the height at which the promontory stands above the symphysis. The second column gives the length of the line B C; the third column the intersection of B C with the back wall of the pelvis; the fourth column the length of the anatomical conjugate. Comparing this fourth column with the first, we find that the length of the conjugate, while undoubtedly affecting the height of the promontory, cannot be the only factor; for with a conjugate of 4·8 in. (pelves 3 and 14) we find a promontory standing 5 in. and 2·6 in. above the pubis; while with a conjugate of 4·5 in. (pelves 8 and 13) the height is 3·8 in. and 2·8 in. To find the explanation of this we must look at the fifth column, which gives the angle A C B the size of which is found to be a factor of almost as great importance.

This angle varies so considerably that we cannot explain the variation simply by changes in the position in which the cadaver was frozen. Its range is from 35° (pelvis 14) to 65° (pelvis 1), between which limits angles of all sizes are found.

Were there a sufficient number of preparations, we might take an average or mean, and thus ascertain what is the normal, or at least the most frequently recurring build of pelvis. We have, however, too few specimens as yet to draw a general conclusion from, and therefore the figures given in the conclusions are provisional. I have reproduced here the sections of three cadavers. Fig. 1, which is the reproduction of section 6, has an angle of 55°, which is the mean for this series of fifteen sections. It also happens to correspond with the received view of the normal inclination of the brim, viz., 55°. Alongside of it I have placed for comparison two extreme deviations from this—section 3, which has an angle of 61° (*v.* Fig. 2), and section 14, with an angle of 35° (*v.* Fig. 3). A glance at these sections side by side will

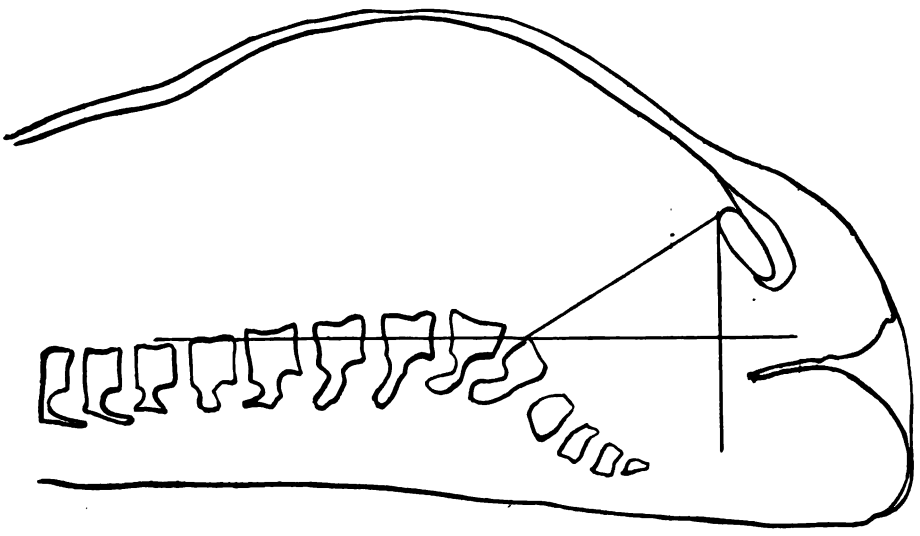


FIG. 2.—Frozen section of a cadaver with an unusually high set of the promontory.

show that the differences between these pelves is not simply one of inclination of the brim as a result of posture, but is due to a peculiarity in the set of the pelvis in the body.

A comparison of these three sections brings out the gynecological and obstetrical significance of this fact of the variability in the position of the promontory. To the gynecologist the length of the line A B is of chief interest; the longer this line, the more will the pelvic contents be brought opposite to the lower regions of the abdomen, and made accessible to abdominal palpation. On the other hand, the length of C B is of obstetric importance; the

longer this line is, the greater is the segment of the pelvis which is brought into line with the abdomen. With a uterus resting on the spinal column and its axis parallel to A B, it is evident that the uterine contents would in Fig. 2 be driven wholly against the

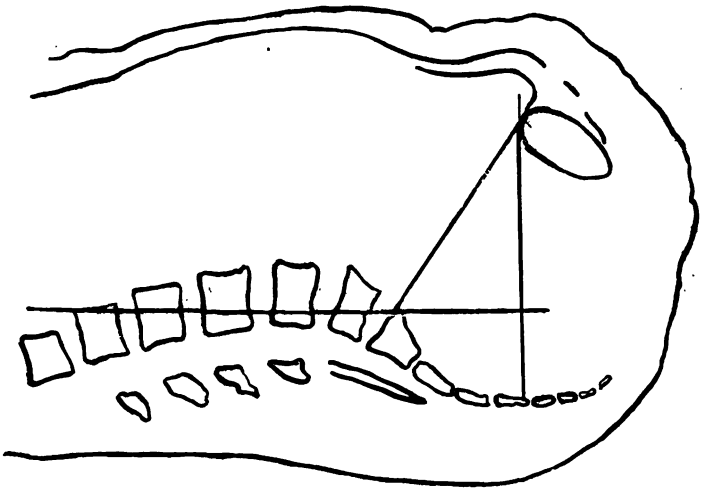


FIG. 3.—Frozen section of a cadaver with an unusually low 'set' of the promontory.

pubis; while in Fig. 3 they would partially enter the pelvis. During uterine contraction the axis of the uterus is thrown forward more or less into the axis of the pelvic inlet; but it is evident that it would have to be thrown much less forward in such a pelvis as that of Fig. 3 than in that of Fig. 2.

The conclusions of this paper may be thus summed up:

1. The position of the promontory is variable, being affected not only by a posture, but by the build of the individual pelvis, which determines the set of the brim.

2. In studying it in frozen sections, we can analyse it into two measurements, one representing the height at which it stands above the symphysis, and the other the distance at which it stands back from it. The mean[1] length of these lines is for the fourteen sections in which they can be measured 3·8 and 2·8 in.

3. Such an analysis is not merely of mathematical interest, but brings out points of gynecological and obstetrical importance. It is evident that this method of studying the pelvis cannot be applied directly to clinical work. We cannot draw a line through the sacral promontory and the first lumbar vertebra in the living subject, but they give us an explanation of the clinical fact with which I started, viz., 'that there is another factor (the size of the angle C A B) besides the length of the conjugate, which affects the position of the promontory. Hence we cannot from the length of the conjugate alone determine the position of the promontory for a given posture.'

[1] The mean length, where there are considerable divergences from it, gives a more exact idea than the average.

VIII. ABSTRACTS OF DR C. F. PONDER'S PAPERS ON THE MIDWIFERY FORCEPS.

Prepared by Dr Wm. Fordyce, Secretary.

In a letter which accompanies the five papers of which I give the following abstract at the request of the Council of the Society, the author states he hopes to be able to point out—(1) The fundamental errors of present obstetric practice regarding the forceps; (2) the chief defects in present practice; and (3) the remedy. He asks the favour of publicity for these papers, and solicits from the Society any criticisms of what he advances in them.

I. In the first paper, entitled 'Midwifery Forceps: A Lever of the Third Class,' Dr Ponder starts with the proposition that the present teaching regarding the action of midwifery practice is based on the assumption that, when in position in the maternal parturient canal, it acts as a double lever of the *first* class, and the object of this paper is to prove that this is a mistake; that its action is that of a lever of the third class; and that in consequence the teaching regarding forceps action is wrong. At first sight he says the action resembles that of a double lever of the first class, *e.g.*, a pair of scissors where the fulcrum is the pin near the centre. The handles may be opened out, and in doing so the blades separate. Here the fulcrum is undoubtedly at the crossing of the handles. This action, however, is possible only when the blades are wider apart than the transverse diameter of the maternal pelvic cavity; and that this action ceases altogether when the handles are brought together. The transverse diameter of the parturient canal when dilated sufficiently to permit of the passage of the fœtal head is about three inches in the maximum diameter between the blades when the handles are approximated and when the scissor-like action ceases.

When the diameter between the blades is reduced below three inches, which is what occurs when there is compression of the fœtal head, the extremities of the forceps most distant from the blades remain in apposition, and the handles open out, especially towards the end where they cross each other.

If now pressure be applied on the handles the blades of the forceps open out but the extremities remain in apposition. In these actions therefore, as the point where the two halves of the instrument remain in apposition is always the extremity most distant from the blades, it is evident that this is the true position of the fulcrum; and that therefore as the power is applied between the fulcrum and the point where the resistance is to be overcome, the forceps in this action is a double lever of the third class, analogous to that of a pair of sugar-tongs when the blades are

crossed, further compression of the handles causing separation and not approximation of the blades. Grasping the handles, therefore, results in a dilating action, which tends to relieve the head from compression; and simple traction on the projecting rests, owing to the resistance of the lateral walls of the parturient canal, which are separated from each other by a distance which is always less than the maximum distance between the forceps blades, tends towards compression of the fœtal head, a compression mainly exerted on the neck and base of the skull.

These two facts the author states are just the reverse of what is now taught, because the forceps is considered to act as a double lever of the first class, whereas he says its action is that of a lever of the third class.

With regard to the action of the screw in axis-traction forceps, he states, in opposition to what is generally taught, that the effect of tightening the screw is to decrease the compression of the fœtal head, and that releasing the screw increases it.

The elastic counter-pressure of the vaginal walls, as in the previous case, causes approximation of the blades of the forceps and slight separation of the handles at the screw; and when the screw is tightened up and the handles brought together the blades separate, and so the fœtal head is relieved from pressure.

II. In the second paper, entitled 'The action which will be beneficial in Parturition,' traction and compression of the fœtal head the author argues is wrong; what should be done is to dilate and straighten the maternal parturient canal. To prove this five propositions are discussed.

1st. That it is not the bony pelvis which in ordinary human parturition causes delay or danger. The diameters of normal pelves at the outlet being 5 inches by 4 inches at least, more when the coccyx is bent back, and the diameters of the fœtal head when fully flexed being 4 inches by 3½ inches, it is pointed out that if the fœtal head is flexed there is abundance of room for it to pass downwards, so far as the bony pelvis is concerned. The capacity of the bony canal continues practically the same throughout the whole of the reproductive portion of a woman's life, and as subsequent labours are more rapid, easy, and less dangerous than first labours, some other cause of the delay and danger must be sought for than the hard canals.

The 2nd proposition follows from the 1st, viz., that it is the soft parts, more especially the perinæum and post-anal tissues, which ordinarily block the way and so delay the birth of the child.

The 3rd. That the uterine expulsive force is ordinarily sufficient to expel the child if the way is opened up for its exit. This uterine expulsive force, Dr Ponder says, has been much underestimated; if it may sometimes seem to be inactive it is only

because of the resistance of the maternal passage. With such a force anything of the nature of traction is unnecessary.

The 4th proposition put forward is that the relief given by nature consists principally in the displacement backwards and downwards of the perineum, so dilating the vaginal outlet and straightening the maternal passage. When the parturient canal is fully dilated and the coccyx bent back the axis of the pelvic canal becomes, it is stated, much more straight than is represented in the ordinary diagrams. If there is during parturition a slight movement of the pelvic bones, as is ascribed by some authorities, the author's contention, that in natural parturition the chief action is that of straightening and dilating the maternal canal, is strengthened. The yielding of the fœtal head by moulding is regarded as only trifling as compared with the amount of dilatation of the maternal passage.

5th. It follows that the assistance which will be truly helpful is dilating and so straightening the maternal passage in assisting nature. The requisites of a good instrument for this purpose he considers are:—One that will dilate the maternal passages; that will protect the fœtal head from injury or undue compression during delivery, and will guide it on its outward journey. The author's own instrument, the Vector, is supposed to meet these requirements.

III. In the third paper, entitled 'The actions which in Parturition are not beneficial but only injurious and tending to disaster,' the author discusses the existing theories concerning the forceps. The friction of the vaginal walls being slight, and the *vis à tergo* of the uterine expulsive force being *enormous*, it follows that if the maternal passages are dilated sufficiently, little difficulty will be met with in labour; and, according to Dr Ponder, the force exerted by the accoucheur in traction on the forceps handles is altogether expended in dilating the maternal passages, and not at all in traction on the fœtal head. Where traction is exerted it is asserted that the shoulder girdle is the part most likely to be held back, and in such cases traction is extended on the child's neck.

2nd. Forceps as a compressor of the fœtal head. The two conditions in which forceps exerts compression on the fœtal skull are—(1) Cases where the blades are in position, not lying loosely in the maternal passages. Here the resistance of the elastic maternal passages press together the forceps blades at their widest parts, and so approximating the distal ends of the blades, thus exert compression which is chiefly expended on the base of the child's skull.

(2.) Cases where the traction is exerted through a rigid instrument, *e.g.*, Simpson's axis-traction forceps, in which the approximation of the distal ends is prevented by the fixation screw. In

this case, when traction is applied the bi-parietal diameter of the fœtal head, instead of lying as it normally should do in the widest part of the blades, is dragged nearer the points and so gets into the narrower portion of the blades. So that the greater the traction the more is the base of the skull compressed, which compression is very different from that which normally occurs in the vertex during non-instrumental delivery.

If the forceps has any beneficial action at all, Dr Ponder states it is due principally to its increasing the wedge formed by the fœtal head, thus enabling the uterine force to act at greater advantage in dilating the passages, and so facilitating the birth of the head.

The one thing which saves instruments of the type of Simpson's axis-traction from general condemnation, he considers, is the fixation screw. The instrument is thus rendered rigid, but is no longer then a forceps, as the blades can then have no action one on the other.

Of the idea of forceps in general and of the teaching concerning their action hardly one good word can be said; its reception resulted from a misapprehension of the action required, and the teaching concerning it has been a mistake from first to last.

IV. In the fourth paper, entitled 'The Proper Time for Instrumental Interference, viz., Early,' the purpose of the paper is to show that in every case labours should be terminated within a few hours of the entrance of the fœtal head into the maternal pelvic canal.

The general opinion of those with large practical experience is that labours should be terminated early, but the theories of certain teachers lead the obstetrician to remain inactive, and it is the practice and not the theory that is correct.

To clear the ground two points are presented:—

1. The tissues of the maternal canal are naturally distensible to an extent sufficient to allow birth of the fœtal head.

2. From the standpoint of evolution it is only what might be expected that parturition in the human female would be difficult and prolonged, and that external assistance would be required.

The chief argument in favour of the early termination of labour is that derived from the condition of the parturient passage. There is a physiological stage of parturition when the tissues are fully supplied with blood and lubricated with mucus and ready for the strain they have to undergo.

After a time comes a pathological state, when mother and child get exhausted, secretion becomes scanty, and the passages congested and painful. The long-continued pressure of the fœtal head, interfering with the normal blood supply of the passages, reduces their nourishment and impairs their vitality.

The conclusion is to terminate labour during the physiological

stage when the tissues can bear dilating with impunity. Interference during the pathological stage leads to injury.

Primiparous labours are more protracted than multiparous ones, not because the physiological stage is longer, but because the labour is allowed to pass on to the pathological stage. As first labours are longer and more complicated, interfere early, and don't delay interference longer than in multiparæ.

Other reasons are adduced in favour of early interference:—

1. Prof. Simpson's statistics showing the increased mortality after complications in labour over twenty-four hours' duration.

2. Prolonged labour, from the protracted pressure leading to devitalisation, inflammation, and sloughing, is the chief cause of puerperal fever.

3. There is a group of cases hardly touched on in the text-books, viz., cases of interference with fœtal circulation by knots on cord or where the cord is entangled round the body or neck of child. This is a common occurrence, and in normal parturition is the chief risk to the child. There is no danger till head enters pelvis, when knots get tightened, and if the cord is round the neck the uterine force compresses and obstructs the fœtal circulation; the only chance of saving the child's life being to expedite labour.

4. Expeditious delivery saves the practitioner's time.

To the profession the forceps is a mystery and has never yet been understood. With a proper instrument, acting according to nature, and by interfering early, the obstetrician will confer a benefit on all concerned.

V. In the fifth paper, entitled 'Conclusions,' Dr Ponder sums up what has been advanced in the previous papers.

He concludes that the fundamental errors of present obstetric practice are:—

1st. Underestimating the amount of the uterine expulsive force.

2nd. Overlooking the straightening of the maternal canal.

3rd. Altogether mistaking what is the action of the midwifery forceps.

4th. The assumption that assistance when given should be by acting on the fœtus.

The chief defect of present midwifery practice he considers the delay, and this delay is the outcome of the present teaching that assistance should be given by acting on the fœtal head; that the practitioner, realising how dangerous this is, prefers to wait, and this delay opens up the way for those complications which arise in prolonged cases.

The remedy for all this he would find in changing our view regarding the best method of assisting labour, and this he believes should be by dilating and straightening the maternal canal, so as to afford an easy exit for the fœtal head.

APPENDIX

TO

DR JOHN MOIR'S ADDRESS ON THE INDUCTION OF PREMATURE LABOUR.

ONLY last month (June 1898) I recovered among some old papers the full notes of the cases referred to in page 19 of my paper on the Induction of Premature Labour. These, with their result, I have now incorporated into a fuller table, showing the advantages of inducing labour in cases of malformation.

I add a short statement of details.

CASE 1.—Mrs S.; primipara. Labour came on prematurely at eighth month and lasted 36 hours; delivered of a living child. In second, third, fourth, and fifth pregnancies went to full time, and lost all the children.

In sixth and seventh pregnancies premature labour was induced, and she had two living children.

CASE 2.—Mrs W., Ponton Street. Embryotomy in first and second labours. In third, premature labour induced: delivered of a living child.

In fourth pregnancy she insisted on going to full time; embryotomy required.

In fifth and sixth pregnancies premature labour induced. In former, child lived; in latter, it died, a footling presentation; first part of labour being easy and rapid, I was not sent for until all was born but the head. Cord pulseless; should and would have been born alive had I been called at commencement of labour, as requested.

Seventh. During next pregnancy she miscarried. After miscarriage the catamenia stopped, and having no idea that she (eighth) was again pregnant, she miscalculated her time, and labour was not induced soon enough by a week or two. It was very severe. The second stage was closely watched and attended to for nearly eight hours. Then forceps were used, and a fine full-grown boy was born; breathed only a few times.

CASE 3.—Mrs S., a big stout woman.

First. In labour, two days and nights; child still-born.

Second. Embryotomy.

Third. Premature labour induced; required the forceps; child still-born, but quite recovered.

CASE 4.—Mrs S., small, delicate-looking woman.

First. Embryotomy.

Second. Premature labour induced. Second stage rather protracted, but on being summoned to assist, found a band of cervix intercepted between the head and brim. On its being pressed up above the brim the head came down and she was safely delivered of a living child.

CASE 5.—Mrs H., short, healthy woman.

First five pregnancies in country, embryotomy.

Sixth. Premature labour in town, under another doctor; child lived seventeen hours.

Seventh. In 1828, premature labour, under the same doctor; boy, lived ten days.

Eighth. Premature labour in country; girl, lived three hours.

Ninth. Under my care. Last catamenia on 16th May 1830. On 12th January 1831, when it was supposed she had passed seven periods and ten days, the os uteri was opened up by the finger and the membranes separated round the os. Repeated on 17th, 19th, and 22nd, when they were still further separated by means of a blunt bougie. On 23rd had slight pains, which passed off. On 25th, pains not having come on, a small puncture was made into the membranes, several inches above the os uteri. On 27th this was repeated; a considerable flow of liquor amnii on each occasion. Slight occasional pains till the 29th; strong in evening. The head continued about two hours above the brim, care being taken to support the os above it; it then passed through with a jerk, and she was soon delivered of a male child, weighing 5 lbs.; at first still-born, but soon recovered and did well. There was in this case not only projection of promontory of sacrum, but a bony ridge along the symphysis of the pubes internally, narrowing the passage to what appeared no more than 2½ inches.

Tenth. In tenth pregnancy made arrangements to come to Edinburgh at end of seventh month. The evening previous to her intended visit pains of labour came on and she was safely delivered of a living child.

MATERNAL MORTALITY.

There were 143 accouchements; many very severe, and all with malformed pelvis. Of these, 2 died of septic poisoning, how induced I have no notion. In one it was the fifth time, and in the other the third time, that labour had been induced. Antiseptics were unknown in my days of practice, and none had ever been had recourse to in any of my patients. For some years in the latter part of my practice I had lost, in the class of cases to which I am referring, neither parent nor child, and was very proud of my success; but at last came the fall in the loss of my third last, and last cases. Still the annexed table is of some value as showing how at least 66 lives were saved, which, but for the treatment employed, must have been lost: many of the children so saved are now strong and healthy, and themselves parents.

HISTORY OF THIRTY-ONE CASES OF MALFORMED PELVIS

in which Premature Labour was Induced.

By JOHN MOIR, M.D., F.R.C.P., Edinburgh.

TABLE I.

LABOUR AT FULL TIME, OR 9 MONTHS.

Cases.		Children. Living.	Children. Dead.
2	Very Severe	6	...

REMAINING TWENTY-NINE CASES.

Cases.	Times.	Children. Living.	Children. Dead.
9	One—Embryotomy	...	9
1	Two "	...	2
2	Three "	...	6
1	Four "	...	4
3	Five "	...	15
11	One—Forceps	...	11
2	One—Version	...	2
31		0	49

TABLE II.

LABOUR INDUCED AFTER 7 MONTHS.

Cases.		Children. Living.	Children. Dead.
2	Very Easy (8th month)	4	...

Cases.	Times.	Children. Living.	Children. Dead.
7	One	7	...
6	Two	8	4
8	Three	24*	1
4	Four	13	3
3	Five	7	8
1	Eight	7	1
31		66	17

* Twins in one case.

MATERNAL MORTALITY.

ACCOUCHEMENTS,	143
DEATHS,	2

Both deaths were from septic poisoning, one in her fifth, the other in her third premature confinement.

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